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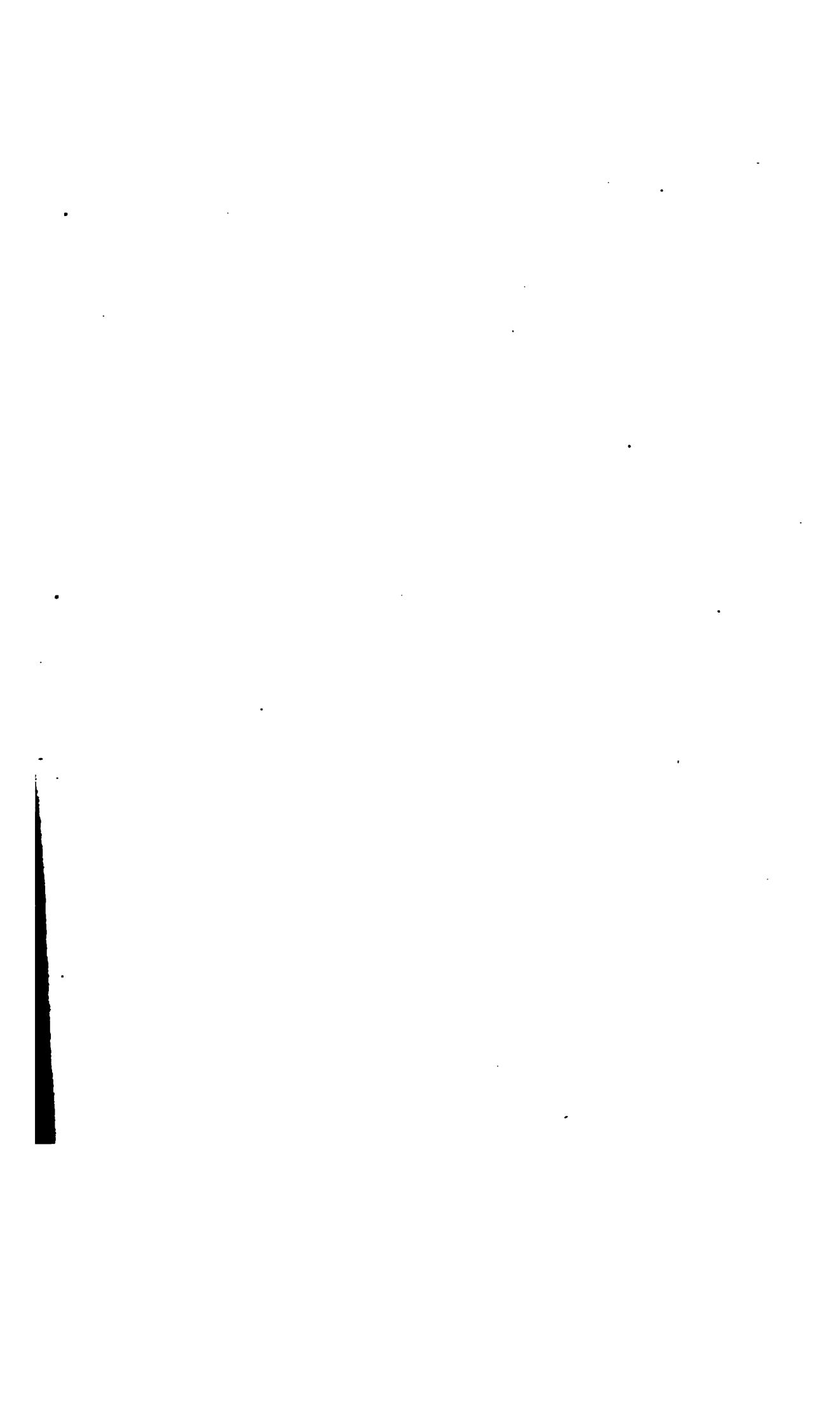
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**DEPARTMENT OF EDUCATION
LELAND STANFORD JUNIOR UNIVERSITY**

**NEW GEOGRAPHIES
FIRST BOOK**



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NEW GEOGRAPHIES

FIRST BOOK

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*WITH MANY COLORED MAPS AND NUMEROUS ILLUSTRATIONS
CHIEFLY PHOTOGRAPHS OF ACTUAL SCENES*

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PREFACE

Home Geography.—In the Introductory volume of the Tarr and McMurry series of geographies, as issued ten years ago, more extensive acquaintance was urged with the fundamental ideas of geography before the child enters upon a study of the earth as a whole. Such preparation was advocated in the preface in the following words:

"Necessity of Home Geography."—The final basis for all study of geography is actual experience. Yet text-books on that subject rarely treat Home Geography at all, and those that do, devote but few pages to it. This subject should, we think, receive far more careful attention.

"Necessity of Other Basal Notions."—Home experience alone, however, cannot offer a complete basis for the later study of geography, because no one locality presents all the features required. From this it happens that the best books have contained some definitions and illustrations, as of mountain, river, valley, harbor, and factory, and have planned to build the later text upon the ideas these gave as a foundation. Such conceptions are certainly necessary in the early part of geography; but mere definitions fail to produce vivid, accurate pictures. The average pupil who has pursued geography for a year, has little notion of the great importance of soil, of what a mountain or a river really is, of the value of good trade routes,

and why a vessel cannot find a harbor wherever it will cast anchor along the coast. Yet such ideas are the proper basis for the study of geography in the higher grades. The fact that they are so often wanting is proof that our geography still lacks foundation.

"How these Needs are Met."—The first 110 pages of this volume attempt to supply this foundation by treating first, such common things as soil, hills, valleys, industries, climate, and government, which are part of every child's environment; and secondly, other features, as mountains, rivers, lakes, and the ocean, which, though absent from many localities, are still necessary as a preparation for later study. Definitions, however, are not relied upon for giving the child this extra knowledge, but detailed descriptions and discussions instead. This by no means involves neglect of the child's own environment from the time the unfamiliar matter is introduced, for throughout the geographies home experiences are frequently used. We believe that our plan gives a fuller guarantee of fitness for advanced study than has heretofore been furnished."

While this plan was a radical innovation in text-book production at the time, the authors have seen no reason for receding from any portion of it. On the contrary, they have greatly enlarged this portion of the book, devoting to it

eighty-five pages of the present volume. The chief additions have been two new chapters, one at the beginning on Food, Clothing, and Shelter—in which man's dependence upon the earth is somewhat extensively treated; and one on Country and City—in which life in the two places is contrasted.

Relationship to Man.—In the former preface the authors defined geography as the science "which treats of the relation between man and the earth," and the text was written upon this basis. It was difficult ten years ago to apply this idea extensively, because so little had been previously accomplished in this direction. The authors feel that one of the most important improvements in the present volume has been effected at that point. Every topic has been *approached*, and receives its entire consideration, from the point of view of man's interest in it. Descriptions of continents and countries offered without reference to human relationships are likely to be colorless and tiresome to the young mind.

Our point of view may be illustrated by the treatment of Asia, for instance. That continent is declared, at the beginning of its presentation, to be the largest and most populous of all the continents, and also to have the oldest civilization. In addition it lies next to Europe. Yet, possibly next to Africa, it is the least known of all the continents. Why it should be so little known becomes then a question of real interest; and the answer, as presented in pages 216–218, involves consideration of its surface features, climate, and inhabitants. Likewise in the case of China, as an example of an individual country, the former

progress of its inhabitants first receives attention. This is contrasted with their present backwardness. Then, since the future progress of the Chinese is one of the live questions of the day, the area and population of the country, the variety of its climate, its surface features, and resources, are all considered with reference to this one problem. Then the recent advances of China are discussed and its principal cities located. Thus, as far as possible, each continent and country has been approached from the point of view of the learner, and the questions raised at the beginning control the presentation that follows.

Organization of Subject-matter.—The close relation of this method of presentation to organization is evident. Good literature is organized around ideas of live interest to man; and any text whatever, intended for children, should be organized on the same basis. Most geography text, however, has attempted to follow the scientific organization, which is that of the mature mind supposed already to be interested in the subject. But even though the attempt has been made, it has not heretofore been followed in full, for, owing to the immaturity of children and to want of space, many of the connecting facts—that reveal the relationship of facts and tend to arouse interest—have had to be omitted, until a mere heterogeneous lot of statements has been all that has occupied many a page.

Believing that good organization is necessary to successful study, the authors have endeavored earnestly to secure it. With this object they have done two things.

First, for each page, more or less, they

have fixed upon some central thought that should tie together the details underlying it, and secure their unity. What this central idea is in each case is clearly shown in the marginal heading ; and by grasping it early, the child is enabled to master a lesson much more quickly and easily than otherwise. It is surprising how many pages of geography and history for children lack such a central idea. A portion of text may read easily and appear simple ; but it shows serious want of organization when you cannot find the one thought with which it deals. Many a lesson is found difficult by children because, while each sentence may be clear, each page, more or less, treats of several things instead of one, and there is nothing to hold these parts together.

It is hardly advisable that all texts for children be provided with marginal headings, for children should have practice in finding these themselves. But it is highly important that enough texts contain such headings to accustom pupils to dividing their lessons up into well-rounded units, or to studying by "points."

In the second place, the authors have selected for the unifying thoughts, not merely scientific facts, but ideas likely to prove of peculiar interest to young students. Africa, beginning on page 231, well illustrates this, as well as Asia and China, to which reference has already been made. In consequence of these two characteristics, the authors believe that the subject-matter in this volume is more completely organized, and organized on a better basis, than is customary in common school geography texts.

Amount of Detail.—Part Two, as well as Part One, of this book has been

greatly enlarged. The main reason for this is that more detail seemed necessary in order to make the subject interesting and clear. The most difficult text to study, or to teach, is one that contains too little detail to clothe its skeleton. A child can memorize or understand ten pages of good literature as easily as he can one or two of the ordinary geography, and will enjoy himself far more in the process. One important reason for this is that the literature offers enough detail to establish a close relation among the ideas and thus secure the story form. Any good text must follow the model set by literature in this respect. Books are thereby made thicker, to be sure ; and longer lessons may, therefore, have to be assigned. But the "length" of a lesson is determined by other things, as well as by the number of pages ; and two pages of an interesting, properly organized text may easily make a shorter lesson than one page of a different kind of text.

Method of Study by Children.—While there is no reason why a text-book in geography, more than any other text, should offer suggestions about methods of study, every one knows that children's ways of studying are often extremely crude, involving great waste. On this account it seemed advisable to include here some suggestions on this subject, applicable both to this and to other books. These are found on pages 10, 30, 53, 66, and 80. These occupy little space ; but they will have accomplished much, if they are influential in leading children to do the things suggested, and if, in addition, they direct the attention of both children and teachers to a fuller consideration of proper methods of study.

Size of Page.—It is with much regret that the small size page has had to be abandoned in this revision; but the length of the line involved seemed mandatory. If the old form of book had been retained, the additional subject-matter would have compelled a much wider page, or else a book so thick that the difficulties of binding would have become serious. Meanwhile, agitation in favor of a line not over three inches in length has become so active, and has seemed so fully justified, that both authors and publisher have felt convinced of the advisability of adopting a larger style of book.

Maps and Illustrations.—The maps in this book have been made by The Williams Engraving Company. Half-tones from photographs are used whenever possible, and these have been

selected with great care, from collections of many thousands, and are in all cases introduced not as mere pictures, but as illustrations of topics treated in the text. It is expected that they will be studied as well as the text. It is believed that the book is as thoroughly illustrated as is desirable for the needs of the student, and the authors have used care not to overillustrate by throwing together a heterogeneous mass of pictures unrelated to the text. It is our idea that a geography should not be a picture album.

From the preceding statements it is evident that the "Introductory Book in Geography," published ten years ago, has suffered radical revision in this edition. There is hardly a page that has not been greatly altered, and most of the volume has been completely rewritten.

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PART I. HOME GEOGRAPHY

SECTION I. FOOD, CLOTHING, AND SHELTER

I. AMONG THE PEOPLE OF OUR OWN COUNTRY

i. Food

In the spring, men begin to work the soil. Those who have small gardens

What the farmers do break up the ground with such tools as spades and forks. Those who live on farms turn the soil over with plows drawn by horses. In these ways the soil is loosened and made soft, so that seeds and plants can grow in it. After the planting is done, the weeds must be killed and the soil must be loos-

ened. In places where little rain falls, other ways of watering the plants must be found.

Later, in the summer, the crops are ready to gather. This is the harvest season, and it is a very busy time for the farmers. They often begin work at four or five o'clock in the morning, and sometimes do not stop before eight o'clock at night.

They raise much more than they need for themselves, and what they do not want they sell. Those of us who live in the city eat *How their work is of value* at every meal some of the things that have been grown on farms.



FIG. 1.—A herd of dairy cows in pasture.

This shows how important the work of farmers is to every one of us.

One of their most valuable crops is grass. It is not a food for people, yet it helps to give us food. Can you tell how? If you cannot answer this question, perhaps Figure 1 will help you. Make a list of the different kinds of food that you eat in one day, and find how many of them come from farms.

A very great number of men are kept busy raising food for other people to eat. They are called farmers. How would you like the work of a farmer? What are some of the pleasant things about it?

Many other people are at work changing the farm crops into food. For example, milk is made into butter and cheese, oats into oatmeal, and sugar-cane into sugar. Can you tell the story of a loaf of bread?

2. Clothing

Every one must have *clothing* as well as food. The Indians dressed very

cotton is one of the farmers' greatest crops. Fields of cotton (Fig. 2) are as common in the South as cornfields are in the North.

Linen handkerchiefs, collars, and cuffs are made out of flax. This plant is also raised in large fields, much as wheat and oats are grown.

Some of the materials for our clothing come from animals that feed on plants. For example, a boy's coat, if not made of cotton, is usually made of the wool that grows on sheep. Find such a coat.

The leather for your shoes came from the hide of some animal, probably a cow. Name several things that you wear, and tell, if you can, from what material each has been made.

Cotton, wool, and hides are called *raw materials*. Much work is necessary to change such raw materials into clothing. For example, cotton and wool must be spun into yarn

Work necessary to change raw materials into clothing

and woven into cloth. Perhaps you can tell what else must be done before a dress or coat is finished. What are some of the things that must be done with hides before they become shoes or gloves?

The work of preparing our clothing keeps many, many thousands of men and women busy both winter and summer. Do you know any persons who do such work?



FIG. 2.—Picking cotton in a cottonfield in the South. The white patches are fluffy cotton out of which cotton goods are made.

lightly in summer; but in winter they had to wear much heavier clothing made out of the skins of animals.

We wear much more clothing than the Indians did, both in summer and winter, and it is of many kinds. Most of the materials for it come from the soil, as our food does. For example, girls' dresses are often made of cotton. In some places

Materials for our clothing, and where they come from

3. Shelter

Shelter, as well as food and clothing, is very important.

Why shelter is unnecessary

We must have houses to protect us against rain; also, against the heat of summer and the cold of winter. We must have fuel, too, such as coal, or wood, or gas, to keep our houses warm.

The Indians often lived in tents called wigwams (Fig. 3). These are pleasant enough in summer, but are very cold in winter.

Sometimes the Indians built much better houses, using wood in some places and stone or clay in others.

What are some of the materials that we use in building our houses? Make as full a list of them as you can. Where does the wood for the floors and for other parts of a house come from? The stone? Where is the material for brick found? For nails? Can you tell where the other materials in your list come from? Where is coal found?

Most of the men in our country are engaged in some one of these three kinds



FIG. 3.—An Indian wigwam, the home of the Indian girl who stands in the front of the picture.

of work, that is, in preparing food, or clothing, or shelter. People living in other countries have the same kinds of work to do. But in many other countries the food, clothing, and shelter are very different from ours, for reasons that you will now learn.

II. AMONG THE NEGROES OF CENTRAL AFRICA

Central Africa, the home of the Negroes, is a part of the earth where the people live in a very strange way. Have you

ever thought what a difference it would make with The heat and rain in Central Africa us, if we had summer all the time? Central Africa is just such a land. Every day in the year is hot.

In some parts of Central Africa the air is damp or muggy, as it is here on our most unpleasant summer days; and heavy thunder-storms are common. Central Africa is one of the雨iest places on the earth.

Where there is so much heat and rain, plants grow very rapidly. You have, perhaps, noticed how grass and plants

thrive on warm, damp days. Because there is just such weather all the time in

The vegetation this part of Africa, plants that grow there grow there in vast numbers.

Giant trees are found in the forests, and vines, trees, and other plants grow so close together that one cannot make his way through them without cutting a path.

Many fruits and vegetables grow wild there; and since there is no winter in

sheep, and goats, or from wild game, such as the buffalo and antelope.

It is also easy to provide clothing in this region. One reason is that not much of it is wanted. Figure 4 shows how little clothing is needed in the hot country of Central Africa. Sometimes skins of animals are used; but the common material is cloth made from the bark and fiber of trees and plants that grow in that land.

Since there is no winter, one might think that houses **Their shelter** would not be needed; but the heat and rain make shelter of some sort very necessary. Sometimes the people live in trees, or in caves, as the Swiss Family Robinson lived for a time. Sometimes they stick branches of trees into the ground in the form of a circle, fasten the upper ends together, and then cover the sides and top with such materials as brush, mud, grass,



FIG. 4.—Negroes of Africa sitting in front of their grass-covered huts.

that land, there is no season when all the vegetation stops growing and loses its leaves.

It is very easy for people to obtain food, clothing, and shelter in such a land.

What the people eat and wear Food is plentiful. Bananas or other fruits can be plucked from the trees and bushes at any time of year. Or if beans, peas, and corn are wanted, one has only to scrape a hole in the soft earth and plant the seeds. There is plenty of meat to be had, too, from cattle,

and straw (Fig. 4). Their huts are always very simple; they usually have no windows, and are only one story high. A savage Negro, when he first saw one of our houses, cried out, "This is not a hut; it is a mountain with many caves in it!"

You can see that the Negroes who live in the hot, damp part of Central Africa do not have to work hard for food, clothing, and shelter. Are they fortunate to have such an easy time? Would you like to live in such a country and in such a way?

III. AMONG THE ESKIMOS

Far to the north of us is the home of the Eskimos. They have both summer and winter. But the summer is so cold that the ground does not thaw except at the very surface. The winters are bitterly cold. Heavy snows then fall, the ground freezes to a great depth, and thick ice forms on the sea (Fig. 5).

In such a country no trees can grow. The Eskimo children have never seen trees of any kind. Only small plants are found there, such as mosses, grasses, and very low bushes; and the plants that

in fishing and in hunting the seal and walrus; and now and then they catch sea-birds and the polar bear. They have very little food except the flesh of these animals. Even that is difficult to get, especially in winter when the sea is frozen over with thick ice.

These sea animals supply oil for heat and for light in the long, dark winter. The seals have a layer of ^{Other uses of} fat under the skin which ^{animals} helps to keep them warm in winter. This seal fat, or blubber, is burned in small lamps for both heat and light. But the Eskimos do not do much cooking. They are fond of raw meat and like to eat it even when it is frozen!



FIG. 5.—Eskimos on sledges drawn by dogs on the frozen Arctic Ocean.

grow wild furnish no food except a few small berries.

With so little vegetation there can be few wild animals on the land, for they would have nothing to eat. There are a few reindeer, foxes, and wolves, but scarcely any other land animals.

What, then, can the Eskimos themselves find to eat? Not very many things, to be sure. They have to look to the sea, not to the land, for their food. From one year's end to another, they are engaged

In summer the Eskimos go hunting in small canoes, or *kayaks*, that are easily upset in storms. In winter they often go on long and dangerous journeys over the ice on sleds, or sledges, drawn by five or ten dogs (Fig. 5). Can you give reasons why horses are not used in the land of the Eskimo?

The sleds and canoes are not made of wood, like ours. The reason is that no forests grow in that country. The only wood the Eskimos have is that which drifts ashore from distant, forest-covered

lands, or from the wrecks of vessels. There is so little of this that pieces of wood are highly prized. An Eskimo will gladly exchange valuable furs for a small amount of wood.

Parts of the bodies of animals take the place of wood in many ways. Their bones are used to build the framework of the sledges and kayaks, and their

ent that is from the clothing worn by the Negroes of Central Africa!

The Eskimo houses seem even stranger than their clothing. Although there is plenty of stone for building, ~~Why the Eskimos build snow houses because the Eskimos~~ have to move from place to place in order to find food. Very often whole



FIG. 6.—An Eskimo igloo made of blocks of snow. In the upper right-hand corner is a little figure showing the inside of the igloo.

skins are stretched over these frames in place of boards. Bones are also used to make spears, fishhooks, pipes, and even needles; and skins are made into harness for the dogs.

The Eskimos need the warmest kind of clothing. Their boots are made of ~~What the~~ the skins of animals, with ~~Eskimos wear~~ the fur on. Their clothes are also made of fur; and in that cold land they need to wear these furs both in summer and in winter. How differ-

villages must be moved many miles on this account.

In summer, therefore, the Eskimos live in tents made of skins, which are easily taken down and moved about. In winter they live in huts made of snow. There is always plenty of snow at hand, no matter where the people happen to be; and in an hour or two they can build an *igloo*, as the Eskimo snow hut is called.

Figure 6 is a picture of one of these igloos. It is about forty feet around the

outside, and is made of blocks of snow piled one on another, till it is high enough on the inside for a man to stand up. The entrance is through a snow tunnel about ten feet long, and so low that the Eskimos have to crawl through it on their hands and knees. The purpose of this tunnel is to keep the cold winds out of the hut; and when all the persons are inside, the tunnel is tightly closed, so that no draught can enter.

A stand, made of snow, is used for the lamp, that gives both light and heat. Low benches of snow, covered with furs, are used for beds. A whole family, and sometimes two families, live in a single hut that is no more than ten or fifteen feet across.

You might think that a snow hut is not very comfortable; but the snow keeps out the cold, and even such huts when it is stinging cold outside, the Eskimos in the igloo are warm enough. The heat of their bodies, and of the small blubber lamp, warms the air in the igloo, so that it is often too warm for comfort. Of course, with so many people in a single small room, the air becomes very close.

If a family decides to remain in one place a second winter, a new hut has to be built, because the old one melts down during the summer. No wonder that the huts are small!

The Negroes of Central Africa have little work to do to find food, clothing, and shelter at any season. But the Eskimos must work hard for these things even in summer; and in winter all the people of a village may starve to death. Are people in our own country better off or worse off than the Eskimos?

IV. AMONG THE PEOPLE OF THE DESERT

While parts of Central Africa are hot and wet, northern Africa is somewhat cooler, and very dry. In fact, so little rain falls there that very few plants can grow. On that account it is a desert land, called the *Desert of Sahara*.

One might travel hundreds of miles in that desert without seeing a tree, or a house, or even a patch of green grass. He might find nothing except sand and rock and a few half-starved plants (Fig. 7).

A little rain falls now and then even in the driest part of the desert, and grass and flowers quickly spring up whenever that happens. To be sure, these soon wither for want of more rain. But a few kinds of plants, like the acacia, are able to live a long time even in such a place. These store up water in their roots, or leaves, or stems, whenever it rains, and this keeps them alive till the next rain comes.

Here and there one finds trees and green grass. For in some places streams flow from the mountains out into the desert, and in other places springs occur. These springs and streams wet the desert soil near by, so that grass can grow; and if the supply of water lasts throughout the year, trees like the date palm can thrive. Such green places in the desert are called *oases*, and on them are found gardens and villages. The oases are like beautiful islands, many miles apart, in a great ocean of sand and barren rock.

People live on the oases year after year. Indeed, good-sized towns have

been built upon some of them. The fruit that these families most commonly eat is the date, from the date palm tree; they also raise figs and wheat, and keep cattle, camels, sheep, and goats.

The food of people on the oases Some people who live in the desert, however, have no fixed homes. They spend their time in tending the desert herds of cattle, sheep, and goats. As soon as these animals eat the grass in one place, they must be

The nomads can get other food from the people who live on the oases. Can you name something that they could obtain from them? What food might the nomads give in exchange?

Food can also be brought from other countries. For, although there are no railroads across that desert, and no rivers large enough for boats, there is a way of carrying goods from place to place. That is by means of the camel (Fig. 8).



FIG. 7.—A barren desert, and some nomads with the tents in which they live.

driven to another section. Thus these herders, like the Eskimos, must move about and take their families with them. They spend their lives wandering about with their herds. For this reason they are called *nomads*, or wanderers (Fig. 7).

The food of the nomads For food, these nomads of the desert have plenty of meat and milk from their camels, cattle, and goats. They make butter, too; but it is so warm in the desert that the butter is sent, melted, to market in goatskins. In some places the people drink the melted butter.

This animal, often called "the ship of the desert," can carry a heavy load on its back, and can travel a long distance without drinking. Indeed, the camel has in his body a sack which is filled when he drinks, and which holds enough water to last for several days. The camels are driven across the desert in droves, called *caravans*.

The dress of the people of the desert, as we might expect, is very different from that of the Negroes. The clothing of The days are very warm, the people for the sky is almost always clear, and



FIG. 8.—A nomad of the desert.

the sun shines brightly. Figure 9 shows the kind of clothing that is worn. The strange covering for the head is called a turban. It protects the head against the sun and the fine sand that is driven about by the winds.

Although the weather is hot during the day, it becomes rapidly cooler as soon

while to build such houses, when they might be used only a few days. Like the Eskimos in summer, therefore, the nomads live in tents (Fig. 7) that can easily be taken down, carried about, and set up again. The skins of animals, or blankets that the nomads weave, are used as covering for the tents.



FIG. 9.—A street in a town on an oasis in northern Africa. Notice the house made of sun-dried clay.

as the sun sets, and the nights are quite chilly. On account of the cool nights these people need much more clothing than the Negroes, and they must sleep under heavy blankets. Their herds supply plenty of wool for cloth; and other materials for clothing are brought by the caravans.

The people living on the oases remain in one place, building houses of sun-dried mud or clay (Fig. 9). But why the nomads live in tents mud huts are not suited to the nomads. It would not be worth

We have now learned some facts about the Negroes in Central Africa, about the Eskimos, the people of the desert, and ourselves. From what has been said it is plain that people do not have their own way fully in choosing what they shall eat and wear, and the kind of houses they shall have. These depend very much upon the amount of heat and rain. In which of these sections is there too little rain? In which too much cold? In which too much heat?

What food,
clothing, and
shelter depend
upon

In studying this book it is a good plan first to read a number of pages without stopping, just as you would read any story. **About how to study** For instance, the first three pages

— up to the part telling about the Negroes — might first be read without pause, for the purpose of finding out what it is all about. Then you might read the same part through a second and a third time, watching each heading that is printed near the margin to see if you are getting its answer. When the part about our country has been studied in this way, the part telling about the Negroes of Central Africa should be studied in a similar way; and so on through the book.

Review Questions

1. Name some of the things that farmers and gardeners do.
2. How is their work of importance?
3. Give examples of other kinds of work that are necessary in preparing our food.

4. Out of what materials is our clothing made? Where do such materials come from?
5. Tell about the work necessary to change these raw materials into clothing.
6. Why is shelter necessary?
7. What materials are used for shelter in our country?
8. Where do these materials come from?
9. What can you tell about the heat and rain in Central Africa?
10. What sort of vegetation grows there?
11. What do the people who live there, eat and wear?
12. What kind of shelter have they?
13. What about the cold and snow in the Far North?
14. What plants and animals are

found there?

15. What is the food of the Eskimos?
16. What other uses do they make of animals?
17. What do the Eskimos wear?
18. Why do they build huts of snow?
19. How are such huts built?
20. Why is it not cold in the igloos?
21. What about heat and rain in the Desert of Sahara?
22. Describe the vegetation there.
23. What is the food of the people?
24. What are the oases? Who live on them? What kind of houses have they?
25. What is meant by the nomads of the desert?
26. What food do they eat?
27. How is food brought to them from other countries?
28. What kind of clothing is worn by the people of the desert?
29. Why do the nomads live in tents?
30. Why is there so little plant and animal life in the Far North, and in the Sahara Desert, while there is so much of each in Central Africa?
31. Why do the Eskimos have so few kinds of food, clothing, and shelter, while we have so many?

1. If you have visited some garden, or farm, in the spring, tell how the ground is prepared for planting.
2. What kinds of work are done later in the season?
3. Make a list of products that some gardener or farmer near you is raising.
4. What things that your grocer sells have come from some garden or farm?
5. Make a list of the many kinds of work that you have seen men doing, and find how many on the list have to do with food, clothing, and shelter.

Suggestions for study at home and out of doors

SECTION II. LAND, WATER, AND AIR

I. THE LAND

i. Soil

HEAT and rain are very important, as we have seen. But they are not of much value alone. There is a third thing that must go with them in order that people may have food, clothing, and shelter; and that is the *soil*, or dirt, in which plants grow.

As soon as the warm spring weather comes, thousands and thousands of men

in our own country begin to work the soil, in gardens and on farms (Fig. 10). Indeed, more than one third of all the people in the United States live on farms. They spend their lives in raising plants, and animals that feed on plants, such as cows, sheep, hogs, and chickens. What they do not need for themselves they sell to other people. Our flour, potatoes, and sugar, the cotton for our clothing, and hundreds of other things come from the soil.





FIG. 10.—Men plowing a field in which wheat is to be sown.

The dense forests of Central Africa, and the fruits and vegetables of that land, all spring from its soil, warmed by the hot sun and kept moist by the rains. It is the warm soil again, watered by streams and springs, that makes life on the oases of the desert possible.

On the other hand, it is the cold in the land of the Eskimos that freezes the soil and prevents the growth of trees and crops. It is the frozen soil that drives the Eskimos to the sea for food.

The dirt under your feet may seem hardly worth thinking about; but it is really one of the most important things in the world.

If there were no soil, there could be no grass, no flowers, no trees, around your home. Without grass and grain there could be no cattle, horses, or sheep; in fact, few animals, such as are found upon the land, could live; for what would they eat? What, then, would you find to eat? There would be no fruits or vegetables, no bread, no butter and milk, and no meat. We could not live if there were no soil.

Since the soil is so important, it is worth while to study about it. How it has been formed, how plants make use of it, and what men do to increase its value to plants,—these are all very interesting questions that every one should be able to answer.

If you have ever made mud pies, or played in the dirt in other ways, you have, perhaps, sometimes wondered what the soil is made of. It has not always been dirt or mud. You know that the wood in your desk has not always been a part of the desk; it used to be a part of a tree, and has a long story to tell about itself before it was brought to your school. So, also, the soil has a long story to tell about itself. Let us see what that story is.

When mud dries upon your hands, and you rub them together, you can notice an unpleasant, gritty feeling. This is caused by hard bits of something in the soil that scrape together. If you rub some of this dirt upon a smooth piece of glass, you can perhaps hear it scratch the glass. This shows that these little bits must be very hard; for if they were not, they could not scratch anything.

so hard as glass. They must be even harder than a pin, for you cannot scratch glass with a pin.

It will help you to find out what these bits are, if you examine some sand. The grains of sand are tiny bits of rock, large enough to be clearly seen. When they are rubbed against glass, they scratch it, because they are very hard and sharp.

Sand is made of rock that has been broken up into fine pieces. Soil is also made of rock ; but the pieces are still finer than sand. The soil that you have seen, such as that in the school yard, or by



FIG. 11.—A stump of a tree decaying, or rotting.

the side of the walk, or in a flower-pot, was once a part of hard rock.

Soil has been made in several ways, which you may learn about *How soil is made from rock* later ; but most of it has been formed by the decay of rock. You know that the stumps of trees and the boards in sidewalks, after a long time, become so soft that they fall to pieces. Perhaps you have called it "rotting," but that means the same as decaying. The picture (Fig. 11) shows such a stump.

Other things, even harder than wood, decay in much the same way, although

perhaps more slowly. Bright and shiny nails decay until they become a soft, yellow rust. Tin cans and iron pipes rust until holes appear in them and they leak.

You may not have thought that stones also decay, but they do. The headstones in old graveyards are often so crumbled that the letters can scarcely be read;



FIG. 12.—A rock cliff showing the cracks that extend through the rock ; also, at the base of the cliff, a large pile of rock fragments that have been loosened by frost, and have fallen down the steep slope.

and sometimes the stones have fallen to pieces. The decay of rock may also be seen in old stone buildings, boulders, and rock cliffs. Have you ever noticed this ?

There are several causes for this decay. All rocks have cracks in them (Fig. 12).

Usually some of these cracks are so large that they can be plainly seen; but what causes the decay of rock there are many others so small that they cannot be seen without a magnifying glass. When it rains, the water steals into the cracks, and by eating into and

rain, roots of plants, and earthworms can reach it there most easily. For this reason the deeper you dig into soil that is formed by the decay of rocks, the less you will find the rock changed (Fig. 13); and no matter where you live, if you dig deep enough, you will come to solid rock.

Why solid rock is found beneath the soil

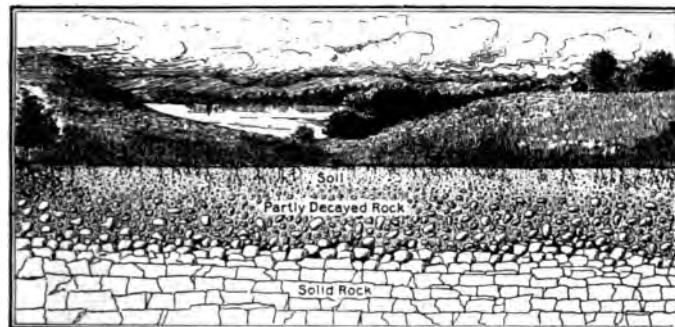


FIG. 13.—A cut into the earth. In this figure notice the *soil* on top, partly decayed rock lower down, and *solid rock* below that.

rotting the rock, this water very slowly changes it into a powder.

The water may also freeze in the cracks and pry the stone apart. Perhaps you have seen iron pipes or water pitchers that have been burst by water freezing in them. This shows how much the freezing water expands; it will even break rocks apart. Some of the pieces of rock broken off in this way are very small, others are quite large (Fig. 12).

Plants help the water to break up the rock. Their hairlike roots push into the cracks, and remain there until they grow so large that they pry off pieces of rock.

The earthworms that one often sees on a lawn after a heavy rain also help in crumbling the rock. In order to get food, they take soil into their bodies and grind the coarse bits together until these become very fine.

Rock changes to soil most rapidly near the surface. This is because the

more easily than other kinds. Another reason is that in some places the rain washes the bits away as fast as the rocks crumble. This may leave the rock quite bare in one place, and make very deep soil in the places where the water leaves the broken bits.

Why the soil is of different depths

Figure 14 shows the soil a little less than two feet deep. Sometimes there is much more than this, and men may even dig deep wells without finding rock. But in many places there are only a few inches of soil, and in others there is not enough even to hide the rock.

One reason why the soil is deeper in one place than in another is that



FIG. 14.—A cut in the earth, showing the soil resting on the solid rock.

Having learned how the soil is made, let us see how plants make use of it.

An acorn that has been planted in the soil sprouts and sends up a tiny stem.



FIG. 15.—A photograph of four weeds, showing the great number of long, hairlike roots.

This grows taller and taller, and sends out one branch after another until the little tree becomes a mighty oak. What a lot of material has been used to make such a tree! Where has it all come from?

The use that plants make of the soil Some of it has been taken out of the air by the leaves, but much of it has been taken from the soil by the roots. While the stem, branches, and leaves

have been growing above ground, the roots have been growing underground, where we cannot see them. These roots have spread out in all directions (Fig. 15) and have extended deep into the soil, in search of things needed by the tree. Dig up a weed, in order to see how its roots have pushed their way in and out through the soil.

Roots have no eyes, to be sure; but they burrow about, and in their own way find what they need. It is not the large or old roots, ^{The value of} however, that do this. That ^{the hairlike} roots is the work of the young roots, many of which are not much larger than hairs (Fig. 15).

If you dig up a weed, or any other plant, very carefully, you will see that it has a great many such hairlike roots. It is these that take the materials from the soil, while the older, larger roots merely pass these materials on to the part of the plant above ground. Every tree, every blade of grass, every weed and vegetable, depends upon such tiny roots for its life.

One of the things that the roots of plants seek in the soil is water. Plants need water as ^{What plants} much as you do; and a ^{take from the} plant in a flower-pot will ^{soil} soon wither and die if it is given no water. Try it, to see for yourself. That is the reason we water our lawns during dry weather in summer.

Roots take other substances from the soil, called *plant food*. This plant food is a part of the soil itself, and is as necessary to plants as food is to you. It is carried, in the sap, to all parts of the plant and used to make stems, leaves, flowers, fruit, and seeds, as the blood in your body is used to make bones and flesh. Every blade of grass and every limb of a tree contains some of this

plant food that was once a part of the rocks. When a piece of wood is burned, some of this rock material is left behind in the ashes.

Every person, even, has some plant food in his body; your bones and teeth are partly made of it. But you did not take it directly from the soil; the plants took it for you, and you received it from them in the flour and other foods that you have eaten.

Plants do not all need the same kind of food, any more than all animals do. **Why different kinds of soil are needed** Horses eat hay and grain; dogs eat meat. So, also, some plants need one kind of food, others another. These different kinds of plant food are found in the different kinds of soil.

What causes different kinds of soil There are many different kinds of soil. Sometimes the rock has crumbled into very small bits, making a fine-grained soil; again the pieces are so large that the soil is coarse. In fact, in some soils the pieces of rock are so large that some of them are pebbles. Then, too, there are many kinds of rock, such as granite, marble, and sandstone; and when they crumble they make different kinds of soil.

Fertile soil In some places the soil has plenty of plant food in it. To raise good crops in such soil, men have to do nothing beyond plowing, planting, and hoeing. Central Africa has a great deal of that kind of soil, and so has the United States. Soil of this kind, with plenty of plant food in it, is said to be rich, or *fertile*.

Sterile soil There is also much soil that has little plant food in it, and that is said to be poor, or *sterile*. One reason for sterile soil is that the rock from which the soil has come may

contain little plant food. On that account one farm may be much more sterile than another next to it.

Soil that was once fertile may become sterile, because plants are always taking some of the plant food out of it. They must do this in order to grow. When weeds and trees fall and decay on the spot where they grew, they pay back what they took away. But if plants are carried away from the spot where they grew, there is danger that fertile soil may be made quite sterile.

Now this often happens. Farmers send away their wheat to make flour, and take their corn, hay, and oats to market. Indeed, they have to do this in order to make a living. Some farmers have sent their crops away year after year, without putting anything back in the ground to take the place of what was carried away. The result is that the soil has become really worn out, or sterile, and the farmers are no longer able to support their families on such land.

The wise farmer takes care to put some plant food back upon the soil, to replace what his crops have taken from it. Then he can continue to raise good crops. **How this danger can be avoided** That which he puts back upon the soil is called a *fertilizer*, because it keeps the soil fertile. People in the city often spread a fertilizer on their lawns, to feed the grass and thus make it grow.

Millions of dollars are spent in the United States every year for fertilizers. If this were not done, the crops would not be nearly so valuable. Then the farmers would suffer; and since we all depend upon the products which they raise, we should all suffer. **Farming in**

the most important industry not only in our country, but in the whole world. Therefore, what is important to the farmer, is important to every one.

1. Why is the soil in our country so valuable?
2. What about its value in other places?
- Review Questions 3. Why is the soil one of the most important things in the world?
4. What is the soil made of?
5. How has it been made?
6. What causes rock to crumble?
7. How does it happen that solid rock is everywhere found beneath the soil?
8. Why is the soil of different depths?
9. What use do plants make of the soil?
10. What is the work done by the hair-

2. Plains

If the soil that rests on the rock had a smooth and level surface like a floor, it would be unfit for farming. For the water, after a heavy rain, would then stand in a thin sheet upon the ground. This would drown the crops and prove unhealthful for both people and animals.

Land with steep slopes is also unfit for farming. The rains wash away much of the soil on these slopes, until



FIG. 16.—Farmers cutting wheat on the broad plains of the West.

- like roots of plants?
11. Name two things that plants take from the soil.
12. Why is it important that there should be different kinds of soil?
13. What causes the different kinds?
14. What is meant by *fertile* soil?
15. By *sterile* soil?
16. How may fertile soil be made sterile?
17. How can such danger be avoided?

Suggestions for study at home and out of doors

1. Find a place where men are digging a ditch, or a cellar, and see how the dirt looks below the surface.
2. Find a boulder, cliff, or old stone wall, that is crumbling away.
3. Collect several different kinds of soil.
4. Find out what trees and vegetables grow best near your home.
5. Visit a greenhouse to find out what kind of soil is used there, and what is done to keep it fertile.
6. Make a drawing of the roots of some weed that has been carefully dug up.

only a rough, thin soil is left; sometimes even the rock is uncovered. The crops, too, are often washed away from such steep slopes by the heavy rain. It is very difficult, also, to do the work of planting, plowing, and harvesting on a steep hillside.

Land that has gentle slopes is better for farming. The water runs off more slowly, without washing the soil away or injuring the crops; more of the water soaks into the soil, leaving it moist; and the farmer can work, or cultivate, the soil more easily.

Land of this kind, with slopes so gentle that it is nearly level, or slightly rolling, is called a *plain*. A very large

part of our country consists of such plains, and this is one reason why the **The extent of plains in the United States** United States is one of the finest farming countries in the world (Fig. 16).

If you were to cross our country on the railroad you might travel for two or three days over nearly level plains, with no mountains, and not even any high hills, in sight. On either side of the track you would see one farmhouse after another, each surrounded in summer by fields of waving grain, and by green

There are thousands of swamps in our country, and it is quite common for a farm to have one or more of them upon it. Swamp land cannot be cultivated until it is *drained*; that is, until the water is made to run off. Drainage of the land, therefore, becomes a very important matter.

Swamp soil is usually very fertile. For this reason, when there is no natural slope to carry off the **What is done with swamps** water, men often set to work **with swamps** to make one. For this purpose they



FIG. 17.—An open ditch dug through a swamp in order to drain off the water.

pastures in which horses, cattle, and sheep were feeding. Now and then the train would pass through a village or a city; but everywhere else, for hundreds of miles, you would find only fertile farms.

In many places, even from a train, one can easily see that there are slopes **The importance of slopes** on this great plain, down which the water runs freely. But in parts of the plain the slopes are so gentle that the surface seems to the eye to be perfectly flat. Yet the fact that the water runs off, proves that even here the land has a slope.

Here and there, however, the surface is so level that the water does not all run off, but makes wet places, called *swamps*.

dig ditches with sloping bottoms that allow the water to run away to some lower place.

Sometimes the ditches are left open, as shown in Figure 17. More often tiles are laid along the bottom, forming a kind of pipe, and then the ditch is filled up with earth. The water finds its way into these pipes and thus flows away. Such drainage is expensive, but it usually pays well, for it makes good fertile farm land out of land that before was useless.

A *plain* is a nearly level, or **Definitions** gently rolling, part of the land.

A *swamp* is wet land from which the water does not run off freely.

Review Questions

1. Why is gently sloping land the best kind for farming?
2. What about the extent of such land in the United States?
3. Why are slopes of great importance?
4. Why are swamps drained?
5. How is this done?

Suggestions

1. Find some ground near your home that seems nearly level. In what direction does it really slope?
2. Where is the longest slope in your neighborhood? Would you call it a part of a plain? Why?
3. Find out whether or not there are any swamps near you. If so, tell how you might plan to drain one of them.
4. Why should a farmer use tile and fill up a ditch, rather than leave it open?

No matter in what direction you look, in a hilly country, the scenery changes. The view from the top, or *summit*, of a hill that requires only a few minutes to climb, is very different from the view at its base (Fig. 18). Can you explain why?

The higher hills, which may require several hours to climb, furnish even finer views. From the summit of such a hill one can see hilltop after hilltop, with valleys between, stretching out for miles in the distance. The valleys wind in and out among the hills, with perhaps rugged cliffs too steep to climb on one



FIG. 18.—A view in a hilly country, with a lake in the valley. Here some of the slopes are too steep for farms, and are, therefore, still covered by forests.

3. Hills and Valleys

Plains are usually so level that one can see for miles across them in every direction. The surface is so flat that, no matter where one looks, he sees the same kind of scenery.

It is very different in a region where the slopes are steeper. The higher parts are called *hills*, and the lower parts, between the hills, are called *valleys*.

side, and long wooded slopes on the other. In the bottoms of the valleys one can possibly see brooks or rivers winding about. If you live among hills, describe some of the walks and views that you have enjoyed.

The soil on hills may be deep and fertile; and then, even though it is difficult to cultivate the ground, the hilly land, like the plains, is used for farms.

Many people build their houses upon

hills in order to enjoy the beautiful views. Another reason for doing this is that the air is cooler and fresher there in summer.

A third and even more important reason is that it is more healthful to live on high ground. Where the land is low, the slope is often so gentle that the water cannot flow off readily. Houses in such places often have cellars that are damp, and the people living in such houses are in danger of fever, and of other kinds of sickness caused by this dampness. But the water generally runs away quickly from a hill, so that the ground there soon becomes dry even after a heavy rain.

In large cities, where land is very expensive, people build almost anywhere. Here the low places are carefully drained, like swamps on farms; drain pipes, or sewers, being used to carry off the water.

In times past, when war was more common than now, men built great castles, with thick walls, on the summits, or crests, of hills (Fig. 19). From these they could look out over the country for a long distance, and spy approaching enemies in time to prepare for them. Besides this, the steep sides of the hills were difficult for the enemy to climb.

Some of the Indians used to build their towns upon the tops of steep hills, in order to be safe from other Indians. For the same reason the early settlers in New England placed their churches and villages upon the hilltops. At present, hills are little needed for protection against enemies.

The bottoms of valleys, unlike hills, usually have a gentle slope. This fact has had a great influence The use of valleys for roads and railways upon the roads of every country (Fig. 20). For in order to get from one place to another, it is easier to travel in a valley than to go up and down across the hills. On that account, when white men first came to



FIG. 19.—The ruins of castles, built on the crests of steep hills in the Rhine Valley in Germany.

this country, and settled among the hills, they built their roads in the valleys. The same thing is still done.

Railroads have also been built in the valleys. Trains cannot be drawn up steep slopes, and therefore the railroads must either cut through the hills or else follow the valleys. The latter is much the cheaper plan, so that in a hilly country railroads wind in and out, often making sharp curves in order to follow the valleys (Fig. 20).



FIG. 20.—A road and a railway winding their way up a mountain valley.

Where the country is nearly level, as upon a plain, it is easier to travel in a straight line. Even in such a place, however, both the wagon roads and the railways are often built round a small hill rather than over or through it.

While many people build their houses upon hills, many more live in the valleys. Farmers often live in the valleys because the best soil is usually found there. The soil is washed into the valleys by the rains and is therefore deeper than on the hill slopes. There is also more moisture in the valleys, so that the crops grow better there.

Another important reason why people live in valleys is the fact just mentioned, that the roads and railways are so often built there. Rivers

where people may trade, and from which they may ship goods (Fig. 21).

When we think of a valley, we usually have in mind a small one, across which

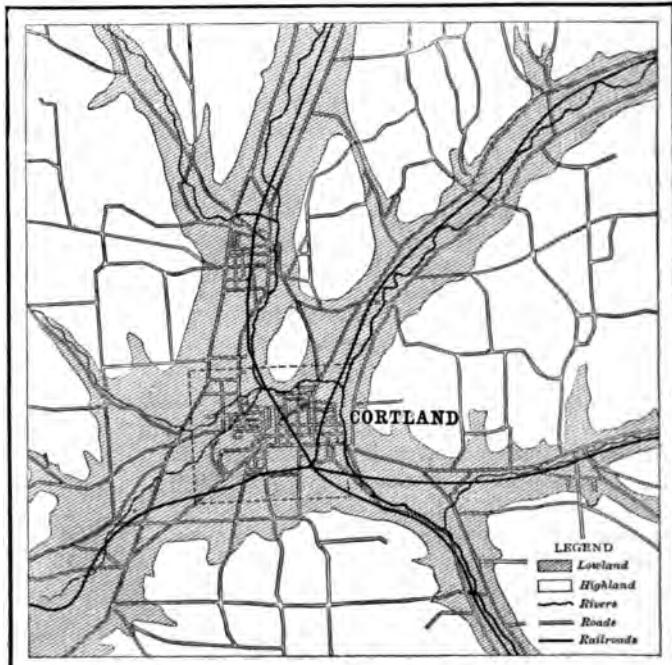


FIG. 21.—Notice how the roads and railways, following the valleys, meet at this point. Because this is a center, a city has grown up here.

large enough for boats are also found in many of the larger valleys. Can you give reasons why people choose to live along such highways of travel?

It is because valleys are such important highways that many of our towns and cities have grown up in them. Some of the largest cities are found where two or more valleys come together. In such places roads and railways, coming from different directions, meet and thus make a good center

a person can easily see, for the valleys **The size of** that one commonly sees are **valleys** both narrow and short.

But valleys are of all sizes. Many are so narrow that a person can easily toss a stone across them. Probably there



FIG. 22.—Trace the divide on the roof of this house.

are some of this kind near your home, and if you search you may find one.

Other valleys are several miles across, and some are far larger. Indeed, there are some so great that one could not travel their whole length or width, even if he were to spend all day and all night upon a fast train. There is one such in our country, called the Mississippi Valley, which is over three thousand miles long, and nearly as wide.

Valleys as large as this must, of course, have very gentle slopes. On that account many people living in the Mississippi Valley scarcely know that they are in a valley. The Mississippi River flows through the lowest part, but the homes of many people are so far from that river that they may never have seen it. The land all about them is so level that it does

not seem to form a part of any slope. It is, in fact, a vast plain. Yet, when the rain falls there, it flows on and on in brooks and rivers, till it reaches the great river, thus proving that the plain is a part of the Mississippi Valley.

Not all the slopes of this valley are smooth and even. There are smaller valleys of many different sizes within this great valley, and some of them are hundreds of miles long.

The more important valleys have names, just as people have; **How one valley is separated from another** for instance, there is the Mississippi Valley, the Hudson Valley, and the Connecticut Valley. Can you name others? It is important that there be some way of fixing the boundaries of such a valley, so that one can know where it begins and ends, and how much land is included within it. Usually this is easily done.

When the rain falls upon the roof of a house (Fig. 22), the water is divided along the highest part, some flowing down one side, some down the other.



FIG. 23.—A map to show the divides between valleys.
Trace the divides.

Water falling upon the highest land between two valleys is divided in a similar manner. Because the water parts, or divides, at the highest place

between two valleys, this place is called a *divide*, or *water parting*, or sometimes a *watershed*. The dotted lines in the picture (Fig. 23) show some divides. Notice how irregular the lines are.

A divide sometimes stands out as sharply as on the roof of a house. In other places it is difficult to find, because the land is so nearly level. Can you point out such a place in Figure 23?

Since the divides are the boundaries of the valleys, it is easy to determine how far it is across any valley. How would you do it?

When it rains slightly, the water soaks into the soil and disappears; but when there is a heavy rain, not all of the water can sink into the ground. Some begins to flow away. One little stream, perhaps less than an inch wide, begins at one point; another joins it; soon several of them unite; and after a little while a good-sized brook or creek is formed.

Have you not noticed this flowing water in the school yard, in the roads, or on the sides of hills? If you have, you have surely noticed that the water



FIG. 24.—Little valleys cut in the soil by the rains.

The divides on the two sides of the Mississippi Valley are many hundreds of miles apart. But there are, no doubt, some valleys near your home whose divides are not one hundred feet apart. See whether you can find one; and if you do, try to trace its divides.

People sometimes speak of the "everlasting hills," but they are not everlasting. ^{How hills and} The hills and valleys that you ^{valleys have} have seen were not always ^{been made} here, and will not remain forever. They have all been slowly made. Let us see how this has been done.

did not flow off without taking something with it. It was muddy. This means that soil had become mixed with the water and was being borne away by it. Every heavy rain bears along much soil, cutting little channels, washing out roads, and perhaps even destroying the beds of railways, so that trains must stop running for a time.

During such a rain little channels, or *valleys*, are carved in the soil, leaving tiny *hills* and *ridges* between (Fig. 24). No doubt you have seen these formed many times. If not, you can easily

make them by pouring water from a sprinkler upon a pile of loose dirt.

There are many heavy rains every year, and in a lifetime their number is very large. During many hundreds of years, then, the water could wash away an enormous amount of soil and rock. This soil the large streams and rivers would carry away to the sea. It is by such very simple means that even deep valleys have been formed, with the hills between them. It has all been done in much the same way as the rain water cuts the tiny channels in the soil of the school yard.

What a change water must have made in the surface of the earth during the thousands of years that have passed! No doubt there were hills and valleys in the very beginning; but every year these have been slowly changing, so that they are now very different from what they once were. After many more years they will be very different from what they are now, for they are even now slowly changing.

This is the way in which most hills and valleys have been formed. Some of the very largest valleys, however, like the Mississippi, have not been made entirely by running water. They have been partly caused by the sinking or the rising of the land. We shall learn more about this when we study about mountains.

Definitions A *valley* is the low land between higher lands, as between hills or mountains.

A *divide* (also called *water-parting* or *watershed*) is the place between two valleys where the rain water parts, or divides, that on one side flowing into one valley, that on the other flowing into the neighboring valley.

Review Questions 1. Why does a hilly country look more attractive than a plain? 2. Of what use are hills? 3. Show how valleys are of use for roads and railways. 4. Why are they of use for

homes? 5. What about the size of valleys? 6. Tell about the Mississippi Valley. 7. How is one valley separated from another? 8. How have hills and valleys been made?

1. Where is the highest hill near your home?
2. What views do you most enjoy in your neighborhood? Describe them.
3. Find pictures of castles, showing their location on hills.
4. Find the divide, or watershed, of some valley near you. Trace it as far as you can.
5. Watch the water carrying off soil after a rain.
6. Find a washout after a heavy rain.
7. Show that streets and roads are so made that they have a watershed. Why is that done?
8. Do you know any roads or railways that follow valleys and wind about among the hills? If so, tell about them.
9. Make a drawing showing the appearance of a hilly country.

4. Mountains

Hills are seldom more than a few hundred feet high; but in some parts of the world the slopes rise thousands of feet. Such high places are called *mountains*.

You may never have seen mountains, but you have certainly seen something that looks quite like them. **Appearance of Mountains** Often, on a summer evening, the sun sets behind great banks of clouds that reach far up into the sky. Some of them have rough, steep sides and great rugged peaks; others have more gentle slopes and rounder tops. Often there are many of them together, and they appear so real that it seems as if one might climb their sides, if he could only reach them.

This is very much as snow-covered mountains appear in the distance. In fact, in a mountainous country one must often look carefully to tell whether he sees real mountains or only some clouds.



FIG. 25.—A view in a region of low mountains, with forests covering the lower slopes.

The mountains in Figure 25 are much like hills, except that they are larger.
The size of mountains They are two or three thousand feet in height. Some mountains are so low, and their slopes

so gentle, that one is easily able to climb to their tops. Such mountains are often called hills; but many mountains are even two or three miles in height. The tops, or *peaks*, of these may rise far above the clouds, and are often wholly hidden by them.

Usually where there is one mountain peak, there are others in sight (Fig. 26). They often extend in lines, forming what is called a *mountain chain*, or a *mountain range*, which may be hundreds of miles in length. Besides peaks, there are many deep valleys and steep slopes in such a mountain chain.

Perhaps you know that it is colder on the summit of a high hill than at its base. When going to the top of the Washington Monument, which is five hundred and fifty feet high, if one



FIG. 26.—Snow-covered mountain peaks in the Alps, many thousands of feet high.

takes a thermometer with him, he finds that it is about two degrees cooler at



FIG. 27.—A mountain on whose summit snow has just fallen, while no snow fell at its base.

the top than at the base. One might not notice any difference in temperature when climbing low hills, but it is easily noticed on high ones. If your home is near such a hill, you can prove this.

People who live among high hills observe that it often snows upon their summits (Fig. 27), while it rains in the valleys below. How can you explain this?

Many mountains rise so high that it is *much* colder at the summit than at the base. In fact, it is so cold on very high mountains that the snow never quite melts away. No rain ever falls there; but it snows instead, both summer and winter, and it is far too cold for trees to grow. Such mountains, therefore, are always white with a thick blanket of snow.

Even in hot Central Africa some of the mountains rise so high that they are always covered with snow. On these peaks it is as cold as in the land of the Eskimos, although the Negroes living at the base of the mountains need hardly any clothing.

Because of the cool climate and beautiful scenery, many people spend part

of the summer among the mountains. Even the lower mountains, which are covered with woods all the way to the top, and have no snow in summer, are so much cooler than the lowland that they often attract thousands of visitors during hot weather.

Railroads now lead to many of the mountains, and sometimes even go completely across them. Following a valley, such a road rises

higher and higher until it comes to what is called a *mountain pass* (Fig. 28).



FIG. 28.—A railroad train crossing a pass in the lofty, snow-covered Alps.

The use of mountains as summer resorts

This is nothing more than a valley between two mountain peaks. Then, after going over the pass, the railroad leads down the valley on the other side. Or, quite often, if the way to the pass is too steep, a railroad winds about, in many curves, until it can climb no higher; then it tunnels directly through the hard mountain rock. Some of the tunnels in mountains are several miles long, and have several thousand feet of rock directly overhead.

There are often good roads in the mountains, and some of the visitors amuse themselves by driving. There are also paths in many directions, leading to points of interest; and many people spend a part of their time in mountain climbing.

This sport, however, is often difficult and sometimes dangerous. *Why mountain climbing is difficult, and even dangerous*. It may not seem difficult to climb to the top of a mountain, but it usually is.

In the first place, a long distance must be traveled. It might require a whole day of steady climbing to reach the summit of a mountain only one mile high. We cannot go straight up into the air. That is impossible. Instead, we must walk up the slope of the mountain and go several miles before we reach the summit.

Most mountains are so steep that one would grow very tired climbing directly up their slopes; therefore a much longer, zigzag path is usually followed. In addition to this, there may be some steep cliffs, or *precipices* (Fig. 29), that could not be climbed even if one wished to do so; and it is necessary to travel round these, to find a place where the slope is less steep.

For these reasons it may be necessary to walk ten miles, or even more, climbing uphill all the time, in order to reach the top of a mountain only a mile high. One would need to stop often for breath and rest.

There may be danger, at some points, especially in climbing very high mountains. One may lose his way, or, since the path is often wet and rocky, with perhaps a steep precipice close to it,



FIG. 29.—Steep rock precipices, up whose face one cannot climb.

one's foot may slip, causing him to fall upon the rocks far beneath. Or great masses of stone and snow may suddenly come crashing down the mountain side, destroying everything in their path. The dangers to be met in climbing high mountains are shown in the following description.

Many people cross the ocean to visit the Alps Mountains in Switzerland. Mont Blanc, one of the best-known peaks in the Alps, is nearly three miles in height.

It is so difficult and dangerous to climb this mountain that persons wishing to do so must employ guides, to show them the way and help them over the worst places.

The round trip usually takes two nights and three days; and as there is no place to obtain food, it is necessary to carry it. Overcoats and blankets are also needed; for even though the journey be made in the hottest summer weather, it is bitterly cold upon the mountain top.

Suppose that we are making such a journey. We start early in the morning, so as to have a long day. Each of us carries a few light articles, but the guides and porters take most, for they are strong and used to climbing. At first we walk along a pleasant path in a beautiful wood; a house is now and then passed, and perhaps a green field, but soon there are no more houses and fields, and we meet no people. The trees become smaller and smaller, until the line is reached above which it is so cold that no trees can grow. This is called the *tree line*, or *timber line*.

From this point on, no plants larger than bushes are seen, and after a while even these disappear. Meantime the soil and grass have become more scarce, while here and there banks of snow are found in the shady hollows. Soon we have climbed to the *snow line*. This is the line above which snow is found all the year round. Now, no matter in what direction we look, rocks and snow are everywhere to be seen, and the snow is often *hundreds* of feet deep.

What a wonderful view is before us! It repays us for all the hard work. We look down upon the woods through which we have just passed, and over them to the deep valleys, with the green fields, pretty houses, and villages far below us. Beyond are seen other steep mountains upon the opposite side of the valley.

A guide takes his place in front of us, and often tells us to stop while he goes ahead to examine the way. It may be that the snow has bridged over and hidden a deep and narrow chasm, and if we were to step upon this snow bridge, we might break through and fall a hundred feet or more.

Sometimes the guides lift us over a dangerous place; and when it is steep or slippery, they fasten all the members of the party together with ropes, so that if one falls, the others may hold him (Fig. 30).

As we advance higher and higher, it is often necessary to take a narrow path on the steep side of the mountain. On the right we can look hundreds of feet almost straight downward; on the left are huge stones and masses of snow almost directly overhead.



FIG. 30.—Mountain climbers, fastened together by ropes, on the way to the top of Mont Blanc.

The snow sometimes slips, forming *snow slides*, or *avalanches*, which are very dangerous. They come tearing down the sides of the mountains with a terrible roar, at times burying whole villages beneath them. You have seen the same thing, on a much smaller scale, when snow has slid from the roofs of houses on warm winter days.

After one night spent in a little house about halfway up the mountain side (Fig. 31), and after much hard work on the next day, we reach the summit. Here, in spite of our heavy wraps, we are all shivering, for upon high mountain tops there are fierce winds which seem to go through even the thickest clothing.



FIG. 31.—Rest house on the slopes of Mont Blanc, above the snow line.

On this barren mountain top there are no birds, no trees, no grass,—nothing but snow and rock (Fig. 32). But if it is a clear day and there are no clouds clinging to the mountain sides below us, we may be able to look down into the beautiful green valleys only a few miles away. There the birds are singing, flowers are blossoming, and men working in the fields are complaining of the heat.

Perhaps you already know that the rocks inside the mountains sometimes contain gold and silver. Iron, lead, and other *metals* are also obtained there. The metal in the rings, watches, and silver coins that you have seen, and even the iron parts of your school desk, may have come from the rocks of some mountain.

Rock that contains metal is called *ore*; and it may look so much like common rock that you might not note the difference. You might have a

very valuable gold ore in your hand and not know that it contained any gold. In order to get the metal out of the ore, much work is necessary. Many men in mountainous countries are employed in mining ore and in getting the metal out of it (Fig. 33).



FIG. 32.—The summit of Mont Blanc, always covered with a deep coat of snow.

The trees in the mountain forests are also valuable. The most common kinds are evergreens, such as the pine, hemlock, and spruce. These are green even through the winter, and can live on the

there is much ice and snow upon some of them; and that upon the higher mountains there is so much that it never melts away, no matter how hot the summer may be.

During hot weather, many streams in the plains dry up; but at such times the ice and snow of the mountains melt the faster. Then the streams which flow forth from these mountains are even more swollen than usual. This water may run along for many miles, until it finally reaches towns and cities where people need it to drink. Do you know of any city that gets its drinking water from such a river?

You have learned that most hills have been slowly made by running water, which cuts out val-



FIG. 33.—In these buildings metal is obtained from the ore that is mined in the mountain rocks far below the surface.

cold mountain sides as far up as the timber line (Fig. 34). The land upon a mountain side is usually too steep and rocky for farms, but even where there can be no farms, trees may grow, covering the mountains for miles and miles with dense forests. These trees may be cut down and sawed into lumber, from which all sorts of wooden articles are made. Possibly the very seat in which you are sitting was once part of a tree that grew on the side of a mountain.

Mountains are of further use because of the water they supply. We have already seen that



FIG. 34.—The forest-covered slopes of lofty mountains, which shut in a mountain valley. Point out the timber line.

leys and leaves high places between. Most mountain ranges have How moun-
tains have been
not been made in this way.
They are really parts of the
land that have been slowly raised, until
some portions are much higher than the made

surrounding country. When mountains are thus raised, the rocks are bent, broken, and folded in a very irregular way (Fig. 35). You can imitate this folding of the mountain rocks by bending, or crumpling, a number of sheets of paper. When the rocks of mountains are folded, the crumpling extends for a great distance, sometimes even for thousands of miles. Such a region of folded rocks, a hundred miles or more wide, and perhaps a thousand miles or more long, is called a *mountain system*.



FIG. 35.—Beds of rock, in the mountains, that have been bent up in an arch when the mountains were raised.

Of course running water cuts valleys in a mountain region as well as in a hilly country. In fact, most of the valleys and many of the peaks and ridges in mountains, have been carved out by running water. The land is slowly raised by folding, and then valleys are cut into it by the water that flows down the slopes.

While it is well, first, to read even several pages of the text without pause, about how to study as before stated, it is necessary in further study to stop here and there to think over what has been read.

For this purpose some stopping places are better than others. Probably the best stopping

place, for every page or two, is found at the end of the answer to each question that is suggested in the headings at the side of the page. At this point, each time, the thought turns to another topic, and it is therefore a good place to make a stop. One can then look back over what he has just read, or think it through without looking at the book.

In preparing for recitation it is not necessary to try to remember the *exact words* of the book. In fact, it is much better to tell what has been learned in one's own words, just as a person does in writing a letter.

A *mountain* is high land, where **Definitions** masses of rock have been pushed up above the level of the surrounding country.

A *mountain peak* is a high part of a mountain. It is a sort of large hill in the mountains.

A *mountain range* is a long, rather narrow belt of mountain country.

A *mountain chain* is a group of mountain ranges, one beside the other, and often nearly in a line.

A *mountain system* is an even larger group of mountains, often including two or more mountain chains.

A *precipice* is a steep rock cliff, often found in a mountainous country.

An *avalanche* is a great mass of snow, ice, or rock falling down a mountain side.

The *timber line* (or tree line) is the line above which no trees grow.

The *snow line* is a line above which snow remains all the year round.

A *mountain pass* is a gap, usually a valley, across the crest of a mountain range.

1. Describe the appearance of mountains.
2. What about the temperature on mountains?
3. Why are mountains of use as **Review** summer resorts? 4. Why is **Questions** mountain climbing difficult and sometimes dangerous? 5. Tell about the climbing of Mont Blanc. 6. State other uses of mountains. 7. How have mountains been made?
8. What is meant by a plain? Swamp?

Valley? Divide? Mountain? Mountain peak? Mountain range? Mountain chain? Mountain system? Precipice? Avalanche? Timber line? Snow line? Mountain pass?

1. If you have made a visit to the mountains, describe what you saw, to the class.
2. Watch for clouds that resemble mountains.
3. Make a collection of pictures of mountains. Note the timber line, the snow line, and other points of interest.
4. Represent a mountain by the use of sand, stones, twigs, and chalk dust. Show the woods and the timber line; the snow line; precipices.
5. Ask some one who has climbed a mountain to tell you about it
6. Write a story relating the adventures you might expect in climbing a mountain.
7. Describe some of the views you would expect to enjoy.

II. WATER

I. Rivers

We have seen how very important valleys are; and we have also learned that they have been formed by the work of running water. We shall next study the running water that has carved out the valleys, and that makes the rivers.

Every heavy rain causes the water to collect here and there, and to flow down the slopes. At first only tiny rills are formed, but these unite to make little streams and brooks. The brooks and small streams, in turn, unite to form rivers. Thus rain alone may cause a river; but as soon as all the rain water runs off, such a river would become quite dry if there were not water from some other source.

Rivers usually have a more regular supply of water. Some of them, as we have seen, start in the high mountains, where the snows never entirely melt away. Others have their beginnings, or *sources*, in lakes and swamps.

It should be remembered, too, that there is a great deal of water in the ground, for some of it sinks into the earth during every rain. It is this water that men find when they dig wells. The underground water trickles



FIG. 36. — Icicles formed in winter where water from underground slowly oozes out from cracks in the rock.

slowly through the soil, and through crevices in the rocks (Fig. 36), often bubbling forth as a *spring*, weeks after it has fallen as rain somewhere else. Many rivers have their sources in such springs, and most large rivers receive water along their courses from hundreds and even thousands of them.

Let us take a journey from the source of a river to its lower end, or *mouth*, and see how it changes. How a river changes and grows as it advances 1. Its upper part ground at the base of a rock cliff.

For a short distance it flows through a grassy meadow (Fig. 37), and is so narrow that you can easily step across it. The water is so clear that you can see the speckled trout swimming about in a deep hole near one side, or *bank*. A smaller branch, or



FIG. 37.—A meadow brook—that later forms a river—near its source.



FIG. 38.—Here the water, shut in by steep walls, leaps from ledge to ledge, each time forming a waterfall.

tributary, enters the brook from another small valley, and makes it somewhat larger and deeper.

Soon the brook leaves the meadow and begins to tumble down a steeper slope. Here it changes greatly. In some places it is narrow and deep; in others, broad and shallow; here it flows swiftly, there slowly.

We put a toy boat upon the water. It floats along quietly for a time, and then, coming to a swift part of the current, called a *rapid*, it is whirled along roughly and upset. We rescue it and set it right again, but soon it comes to a place where the water falls several feet from the top of a ledge (Fig. 38). In tumbling over this *waterfall* the boat is again upset, and dashed against the rocks.

As the water rushes along, beating itself into foam, it is here and there joined by other tributaries, some very small, others nearly as large as the brook itself. Thus the stream gradually grows broader and deeper.

Often the water must rush around or leap over large boulders that lie directly in its path; and often it

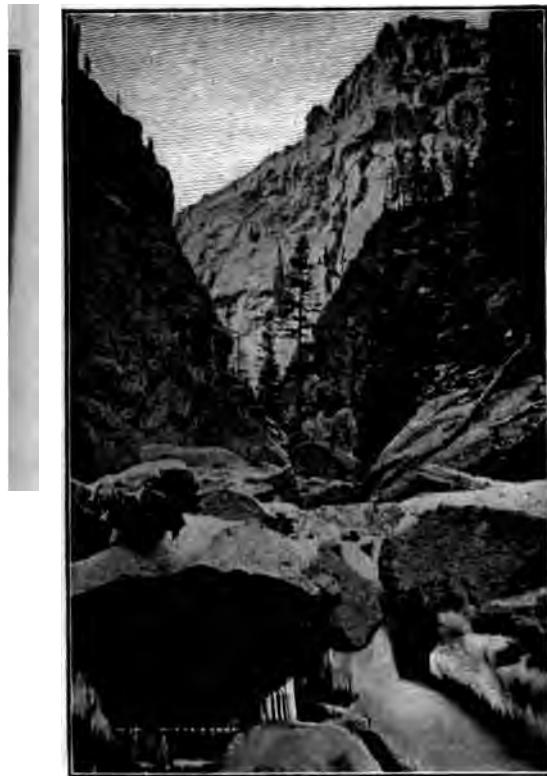


FIG. 39.—The stream, shut in by towering cliffs. The large bowlders in its bed have fallen from these cliffs.

falls directly downward for many feet, with a roar. The stream is now in a deep gorge, with the rocky cliffs extending high on each side, and shutting it in like walls (Fig. 38). It seems quite helpless, with the great, hard rocks all about it. Yet it is really getting the better of this rock, for pieces of stone are often loosened and fall from the steep cliffs into the water. Then the torrent hurls them against one another, and grinds them against the bottom, or *bed*, of the

stream until they are worn into smooth, round pebbles. These pebbles are borne on downstream, and are slowly ground up into grains of sand and bits of clay.

The bed of the stream and the rock cliffs by its side are ground away at the same time. It is this grinding that has made the gorge so deep and caused its sides to rise so steep and high. The scenery here is wild and grand, with towering cliffs on either side (Fig. 39). Now it is too difficult to follow the stream, and we leave it, to join it again many miles below.

Here the river has left the mountains and flows in a broad valley through a hilly country. Some of the ^{2. Its middle part} slopes are steep and covered with forests; others, more gentle, are cleared of trees and dotted with farms, farmhouses, and barns.

The current is not so swift now, although there are still some rapids and falls; and instead of rocky cliffs the banks are low (Fig. 40). In fact, in



FIG. 40.—The river is now large, and its banks are low and bordered by farm land.

some places these are not much higher than the water. Here and there a tributary, itself almost a river, pours its flood into our stream.

It has now been many days since this water left the mountains. The river has become so deep that we cannot touch its bed with a long pole, and so

has greatly changed. In the mountains the water rushed rapidly and noisily onward, dragging along boulders and pebbles; in its middle part it flowed fast enough to carry only sand and mud; but now the current is so gentle that it can carry only the finest bits of rock mud. These bits are so tiny that, if you were

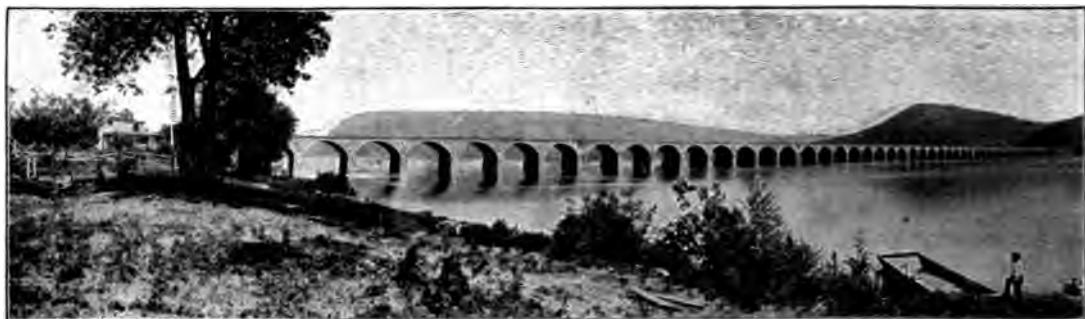


FIG. 41.—Here the river is so broad that a very long bridge is needed to cross it.

wide that bridges are needed to cross it (Fig. 41). We can now drift along easily in a boat, watching the men at work in the fields, and the towns and villages that we pass.

At one point, however, the current grows swifter, and finally the water tumbles in a great fall. We must leave the river at this point and pass around the fall. Here is a large city with many mills and factories. From this point on, the stream is so broad and deep that large steamboats can travel upon it; it has now become a great river.

It is still several hundred miles to the river mouth, and since other rivers, both ^{3. Its lower} large and small, continue to course join it, our river steadily grows deeper and broader. The banks become lower, and they are occupied by many towns and cities, with farms between.

In this part of its course there are no rapids and falls. Indeed, the current

to place some of the muddy water in a glass, it would take hours for all of them to settle and leave the water clear.

At last we are approaching the river mouth, toward which the water has been steadily flowing for weeks. The river is now a full mile in width, and moving very slowly. It never dries up, because there is always a supply of water from its thousands of springs, and it drains so great a country that rain is nearly always falling into some of its hundreds of tributaries.

Not only river-boats, but ships from the ocean are now passing up and down the river. Now the water divides into several streams, each flowing into the ocean along a separate course (Fig. 43). Each of these pours its fresh water into the salt water of the sea, and beyond their mouths no land is to be seen, — nothing but water everywhere (Fig. 42).

Other rivers may differ from this one in many ways. Instead of having their sources in springs among the mountains, they may start from swamps or lakes. They may have low, soft

system (Fig. 43). For instance, we speak of the Mississippi River System, meaning the Mississippi River and all its tributaries.



FIG. 42.—Mouth of a large river where it pours its water into the ocean.

banks near their sources, instead of high rocky ones, and they may have no rapids or falls. Instead of emptying directly into the ocean, they may enter other rivers as tributaries, or they may pour their waters into lakes. But, in spite of such differences, other rivers are much like this one in most respects. If there is a river near you, how does it resemble the one described? How does it differ from it?

We have seen that from its source to its mouth a river may receive water from hundreds of tributaries. Thus the rain that falls in places even hundreds of miles apart may at last be brought together in a single main stream. Such a main stream, with all of its tributaries, is called a *river*

All the country that is drained by a single main stream is called a *river basin*. Thus all the land drained by the Mississippi River and its tributaries forms the Mississippi Basin. In what river basin is your home located?

Very great quantities of soil are carried away by rivers. What rivers and much do with their rock is ground up and carried off by them. This load of rock bits that rivers carry, is called *sediment*. Some of it comes from the pebbles that are rolled about in the stream bed, and some comes from the stream bed itself. What becomes of it all?

If you have seen a sidewalk, or a field,



FIG. 43.—Map of a river system. Point out the source; the mouth; the main stream; several tributaries.

flooded with water, you perhaps remember that a thin layer of sand or fine mud was left when the flood 1. **Flood plains** disappeared. The sand and mud were borne along by the current,



FIG. 44.—A river which has overflowed its banks in time of flood. The tree is completely surrounded by the flood.

until they reached a place where the water did not move swiftly enough to carry them any farther. Then they slowly settled.

After heavy rains, or when the snow melts rapidly, rivers often rise so high that they overflow their banks (Fig. 44). At such times the water spreads out in a thin, slowly moving sheet, on both sides of the main current. Then, as just described, this slowly moving water allows a thin layer of mud to settle. Each flood adds another layer, making the land a little higher, until, after many years, it is built above the usual level of the river. Such land is generally a level plain; and, since it is made by river floods, it is called a *flood plain*.

This is one of the ways in which plains are made. Near small streams such plains are generally narrow strips of

land (Fig. 45) between the stream and the hills that rise at some distance on either side. But in large valleys, like the Mississippi, the flood plains are many miles in width.

Flood plains make the best kind of farm land. The soil is very fertile; the surface is so level that it can be easily cultivated; and, being so near the water, it has plenty of moisture for the roots of plants.

Not all the sediment that a river carries is used to build flood plains along 2. **Deltas** its banks. Much of it is drifted on to the river mouth, where it enters a lake or the ocean. Here the water

is usually quiet, so that even the finest mud sinks to the bottom. At first only enough sediment is collected to form



FIG. 45.—A narrow flood plain bordering a small stream, which in time of flood overflows the plain.

low, swampy land. But, like the flood plains, this is slowly built higher and higher, by a layer of mud from each flood, until it becomes high enough to make dry land.

Such plains at the mouths of rivers form what are called *deltas* (Fig. 46). Many rivers have deltas so wide that one cannot see across them, and the great quantity of sediment from which they are made has come from the fields, hills, and mountains, perhaps hundreds of miles away. Such delta lands, like flood plains, are very fertile and make excellent farms.

Rivers are of importance in other ways besides carving out valleys and building **The value of rivers for drainage** flood plains and deltas. Each river is really a great open ditch for draining the surrounding land.

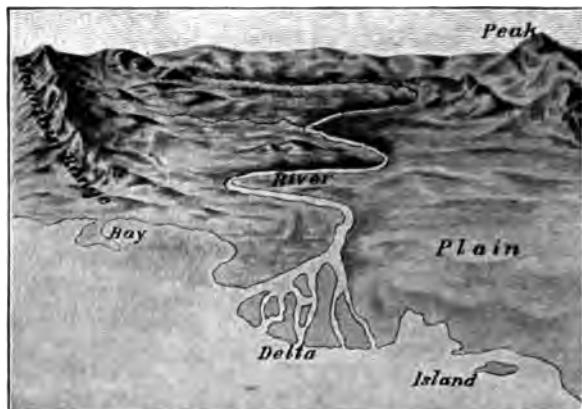


FIG. 46.—The delta of a river.

rapidly. If it were not for rivers, this water could not run off so quickly. People in towns and cities along a river bank also owe a special debt to the river, because it quickly carries away all sewage.

While rivers drain the land, and **Their value thus for the water supply** keep it healthful, they also bring the much-needed water to plants, animals, and man.

We have already learned in our study of the Sahara Desert how necessary water is to plants. In desert countries men lead water from the streams many miles, through ditches or pipes, and let it spread out over the



FIG. 47.—A large ditch, in western United States, in which water is led from a river to be used in watering crops in the desert.

Its work in drainage is always of value to the farmers who live in the valley through which it flows; but its importance is most plainly seen when heavy rains fall, or when the snow melts

thirsty soil, so that plants can thrive (Fig. 47). That is called *irrigation*, and in many places, including some parts of our own country, no crops can be raised without it.

Again, many animals and people depend upon rivers for the water that they drink. Even whole cities often

wood, or grind corn. *Steam* is also used for power; for example, to turn the wheels of a railway engine, so that it can drag the heavy cars along.



FIG. 48.—An old-fashioned water wheel used to give the power for grinding grain into flour in a grist mill.

obtain their drinking water from rivers. Find out where your own drinking water comes from, if you do not already know.

The water of rivers is also used for turning water wheels

Their use (Fig. 48).
for manufac- You have,
turing perhaps,
noticed how wind-
mills work. The wind
blows the large wheel
round and round, and
it may be so con-
nected with other
wheels that it can
pump water, or turn
a saw for sawing

River water is made to do work in much the same manner. Where there is a swift current, or where there are waterfalls, such as the Niagara Falls, it is often easy to run some of the water off to one side through a ditch or pipe. The water, racing rapidly along, or falling with great force, strikes a wheel (Fig. 48) and makes it whirl round. This wheel, being connected with others, causes them to turn also, much as one wheel in a clock causes others to move.

Thus machinery is set in motion by which logs are sawed into lumber, grain is ground into flour, cotton is made into cloth, and many other kinds of work are done.

Water that furnishes the power to turn the wheels is called *water power*; and the buildings in which such manufacturing is carried on are called *factories*, or *mills* (Fig. 49).

The water in most rivers does not flow fast enough to strike a wheel with much force. Water power is found



FIG. 49.—A large mill beside a waterfall that supplies the water power for running the machinery in the mill.

mainly in rivers with swift currents, and especially near rapids and falls. There mills have been built (Fig. 49), and then cities have often sprung up. We found one such city on our journey down the river, described on page 34.

There is one other way in which rivers are very valuable. It has always been difficult to find an easy navigation means for carrying goods from one place to another. In some places there are no roads, and even where there are roads, they are often hilly, rough, and muddy.

much as scores of wagons or cars (Fig. 50), and many boats can go up and down at the same time, so that a large river is equal to several railroads. Besides, such a river may lead a long distance into a country. For example, one can travel by boat for thousands of miles up the Mississippi River and its tributaries.

For these reasons, carrying goods by boat upon rivers, or *river navigation*, is a very important business. Indeed, it is so important, that broad ditches, called *canals*, have been dug in many places (Fig. 51) in order to improve it.



FIG. 50.—A large steamboat on the Mississippi River.

Yet most of the things that we use, such as sugar, flour, oil, meat, coal, lumber, and clothing, must be carried long distances, sometimes thousands of miles. Even if the roads were excellent, it would take a great deal of time, and cost much money, to haul these materials in wagons. To ship them by railway takes less time, but is expensive.

A broad, deep river is really one of the finest highways in the world. To be sure, no wagons or cars can be drawn over it, but boats are easily moved upon it. A large river boat can carry as

Sometimes these canals have been extended around rapids or waterfalls for the use of river boats. In other places they have been built many miles across the land, so as to connect one river with another.

Before the time of railways,—which is no longer ago than when your great-grandfathers were boys,—boats were used for carrying all sorts of articles. Even to-day, when there are so many good wagon roads and railways, it is cheaper to carry many things on boats than in cars.

It is easy to see, then, why many people have chosen to build their homes near rivers. A farmer prefers to live near a good wagon road, or near the

A *river basin* is the land drained by a river and all its tributaries. The divide surrounding it forms its boundary.

A *tributary* to a river is another stream that flows into it.



FIG. 51.—A canal boat in a canal dug around some rapids in a river.

railway station, so that he may easily send his crops to market; and for the same reason, people have always liked to live near a river, which is a good highway, or *waterway*. It is partly on this account that many of the large cities of the world stand on the banks of large rivers. Do you know of any such cities?

Definitions A *river source* is the place where a river starts.

A *spring* is water flowing forth from the ground.

A *river bank* is the land that borders a river. Each river has two banks.

A *river channel* is the part of a valley that a river occupies.

A *river bed* is the bottom over which the water flows.

A *rapid* is a part of a river where the water flows so swiftly that it is tossed about.

A *waterfall* is a part of a river where the slope of the bed is so steep that the water falls nearly straight down.

A *river system* is a main stream with all its tributaries.

The *mouth* of a river is its lower end. It is usually the part where its waters empty into a larger body of water, such as another river, a lake, or the ocean.

A *flood plain* is the plain along the banks of a river that has been built up by the sediment that settles during floods.

A *delta* is the plain formed at the mouth of a river by sediment that the current can carry no farther.

1. How do rivers begin? 2. Describe the upper part of a river. 3. Describe its middle part. 4. What is the condition in its lower course? 5. How may other rivers differ from the one described? 6. What is meant by a river system? By a river basin? 7. Where are flood plains found, and how are they formed? 8. Where and how are the deltas of rivers formed? 9. How are rivers of importance for drainage? 10. How are they of value for supplying water? 11. For manufacturing? 12. For navigation?
13. What is a river source? A spring? River bank? River channel? River bed? Rapid? Waterfall? River system? River basin? Tributary? River mouth? Flood plain? Delta?

1. Why are the rocks in river beds usually so smooth and round? 2. What is meant by "up a river"? By "down a river"? By "right bank"? By "left bank"? 3. Find a spring. Why is its water cool? 4. Find a flood plain. 5. What are the causes of river floods? 6. Do you know of some city that gets its water from a river or a lake? If so, how is the water brought to the city and distributed to the houses? 7. Make a water wheel, and arrange for a stream of water to turn it. 8. Make a collection of pictures of rivers, and notice as many facts as you can about them. 9. Make a drawing of a river, showing its source, mouth, tributaries, and flood plains.

2. Ponds and Lakes

If you build a dam of sticks and mud across a small brook, the water soon fills the little basin that you make, and then flows out over the dam. In this way you can make a very small pond (Fig. 52). How ponds and lakes are formed

wood, or stone, across much larger streams (Fig. 53). They do this because the rivers that supply towns and cities with drinking water, or with power for manufacturing, often become too low to



FIG. 52.—A boy making a small pond by building a dam in a roadside gutter.

furnish the amount of water needed. By means of the dam a large basin is formed;



FIG. 53.—A dam built across a stream in order to make a lake for storing water.

In order to make ponds or small lakes, men often build dams of earth, and when the river is high, enough water may be collected in it to last through the

dry season. If you have seen such a pond or lake, describe it to the class.

Most ponds and lakes have been caused in much this way. That is, the water has collected behind dams that have been formed across streams. This is true even of the large lakes, some of which are two or three hundred miles long and fifty miles or more wide. Usually, however, these dams have not been built by men.

Some of the dams have been made by beavers (Fig. 54). There used to be a great many beavers in our country, and some are still left.

been widened by the forming of a dam. The stream flows into this *Names for parts of a lake* body of water at one end. This end is really a little higher than the other end, and is called the *head* of the lake. The water flows out at the lower end, which is called the *foot* of the lake. The stream that flows into a lake is called the *inlet*, and that which flows out is called the *outlet*.

Some lakes have no outlet, because there is so little water that the basin cannot fill and overflow. The water in such lakes becomes



FIG. 54.—A dam of sticks placed by beavers in a swift stream, in order to make the pond in which they live.

Since they prefer quiet, shallow ponds in which to live, they gnaw down small trees and make dams with the sticks. Then they build their houses in the ponds thus formed.

In other places, as among mountains, where the sides of the river valleys are steep, great avalanches of rock and earth have fallen, and blocked, or dammed up, a stream. These are some of the simplest ways in which dams have been made across valleys, to form ponds and lakes. In your later study of geography you will learn about other ways in which ponds and lakes have been made.

From what has been said, it is clear that a pond or lake is usually nothing more than part of a stream that has

salty. Perhaps you have heard of the Great Salt Lake, in Utah. Its water *Why some lakes become salt* is so salt that no one could drink it, even if he were dying of thirst.

The reason why such lakes become salt is as follows. There is some salt in all water, even in that which we drink, although so little that we do not notice it. When water flows into a lake, the salt is carried with it. If there is no outlet, the water cannot flow out, but it escapes, because every day some of it dries away; that is, it is changed into vapor and carried away in the air. The salt cannot pass off in this manner. It remains, therefore, and slowly collects, until the water of the lake becomes salt.

You have heard of the Sea of Galilee, and of the Dead Sea; both of them are in Palestine.

The Sea of Galilee is a fresh-water lake, with the Jordan River for its outlet. This fresh-water river finally empties into the Dead Sea, a lake that has no outlet. The air in that desert country is so dry that fully as much water passes off from this lake in vapor as enters from the river. On that account the Dead Sea cannot overflow, and it has become one of the saltiest lakes on the earth. It is so salt that fishes cannot live in it, and that is the reason it is called the Dead Sea.

tant waterways. Upon the Great Lakes, in the northern part of the United States, hundreds of vessels are engaged in carrying passengers, grain, coal, lumber, and countless other products. On this account many people have settled on the shores of large lakes, and as a result many towns and cities have been built there. Do you know of any?



FIG. 55.—The result of a morning's fishing from a canoe in a lake in Canada.

Like rivers, ponds and lakes are of use to men in many ways. They help to keep the ground moist near their shores; they furnish water to cities, to factories, and to farmers for irrigation. Besides this, many valuable food fish are caught in lakes; and in cold countries much ice, for use in summer, is cut from their surface.

Again, lakes, like rivers, are impor-

tant because their shores are often very beautiful; and the air there is usually cool in summer. Because of this many persons go to lakes, as they do to mountains, to spend part of their summer vacation. There they can enjoy the hunting, fishing (Fig. 55), canoeing, and bathing, as well as the walks along the sand and pebble beaches and in the woods along their shores.

Review Questions

1. How are ponds and lakes formed?
2. Give names for the parts of a lake.
3. Why do some lakes become salt?
4. What are some of the uses of ponds and lakes?

Suggestions

1. Find a pond or small lake and examine the dam that caused it.
2. What dangers do you see from lakes, when the dams made by men have not been well built?
3. Find out more about beavers.
4. What is meant by "up a lake"? By "down a lake"?

travel, if you went far enough, you would come to it.

If you wished to go to the home of the nomads of the desert, or of the Negroes of Central Africa, you would have to travel across the ocean; and even if you went on a fast steamer, it would be many days before you arrived there. All the time you would be out of sight of land, with nothing but the level ocean



FIG. 56.—The vast ocean, with no land in sight. The sailboats are fishing vessels.

3. The Ocean

The great rivers, starting as tiny brooks, grow into larger and still larger streams, until, after days the ocean and perhaps weeks, they mingle their waters in the sea or ocean. No doubt much of the rain that falls near your home finally reaches the sea in this way, and if you could float along upon it in a boat, you, too, would in time reach the ocean.

We can see across most lakes, and can sail across even the largest in a day or two; but the ocean is far larger. One could sail upon it, in the same direction, for many days without coming to land (Fig. 56). Indeed, the ocean is so large that it surrounds all the land on which people live, and no matter in what direction you might

about you. Every day would be somewhat warmer than the day before, until finally you reached the hot country of Africa.

To reach the land of the Eskimos you would also go by ship on the ocean, and travel for days upon it. On this journey every day would be a little cooler than the day before, and finally you would come to a region where it is so cold that there is ice on the sea even in summer.

If your home is not near the ocean, you might have to make a journey of one or two, or even three or four, days to reach it. It might be necessary to go up hills and across valleys, to pass around lakes, and possibly even to cross great ranges of mountains. You would be surprised to find how much land there is, and how many farms, villages,

towns, and cities there are. Find out how long it would take to reach the ocean from your home.

Although there is so much land, there is far more water. In fact, there is

ocean. Since plants, animals, and men must all have water, the ocean is of value to all living things on the land. It is in supplying water for rain that the ocean is of greatest importance.

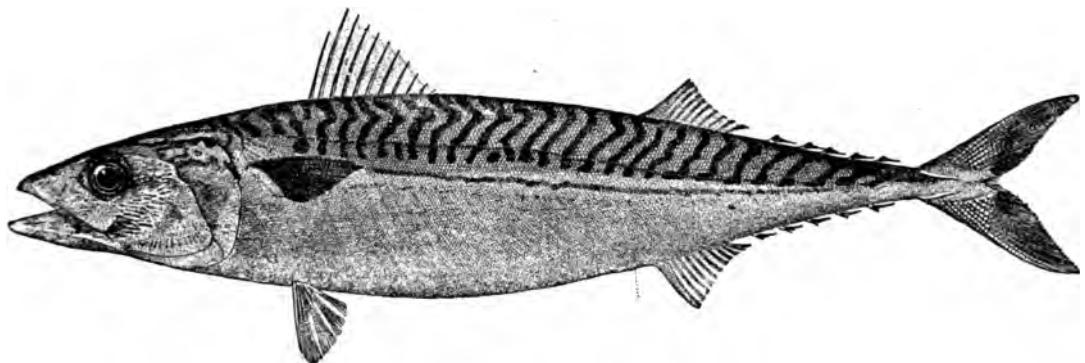


FIG. 57.—A mackerel. Mackerel are usually from one to one and a half feet long

nearly three times as much water as land. The ocean is so immense that the great rivers in all parts of the earth pour their water into it. Their mouths may be thousands of miles apart, yet the sea stretches far enough to reach them all.

The water of the ocean is too salt to drink, but river water is fresh. Since there are many thousands of rivers entering the sea, you might expect that their water would make the ocean less salt. It does do so near the mouths of great rivers, but soon the fresh water becomes mixed with and swallowed up in the salt water; for the ocean is so large that all the river water that enters it is not enough to make it fresh.

Plants, animals, and men all owe much to the ocean, for without it very little rain would fall. Moisture is always rising into the air from the ocean, and being carried about by the winds. When it falls from the clouds, we have rain. Even rain that falls thousands of miles inland comes largely from the

Value of the ocean in furnishing water for rains

There are other ways in which the ocean is of value. One of these is in supplying food. You know (p. 5) that almost all the Value of the ocean as a source of food food that the Eskimos eat, such as seal, walrus, and fish, comes from the sea. Fish from the ocean, or salt-water fish, as they are called, are a very important food for other people also, and many men make their living by going out in boats and catching them. Great numbers of fish are sometimes found close to the land; but often they are caught far out in the sea, so that the fishermen must remain out of sight of the land for days at a time (Fig. 56).

Instead of hooks and lines, long nets are often used, and so many fish are sometimes caught in these nets that the boats are soon filled with them. No doubt some of the mackerel (Fig. 57) or herring that you have eaten have been caught in this way. Halibut also come from the sea, and so do codfish (Fig. 58), which may be seen in almost any grocery

store. Picture 56 shows a fishing vessel that is used in catching salt-water fish.

makes the seashore a pleasant place to spend the summer.

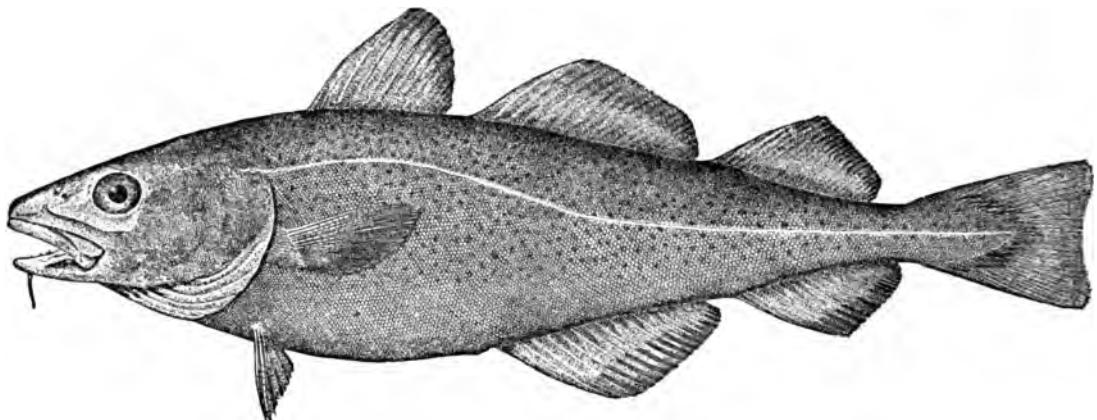


FIG. 58.—A codfish. Codfish are often three or four feet long.

The ocean water is cooler than the land in summer, and for that reason the breezes that blow from the ocean are cool. This

value of the ocean as a pleasure resort makes the seashore a pleasant place to spend the summer.



FIG. 59.—The ocean waves dashing into foam on the rocky coast of New England.

it is dark and gloomy. There are beautiful sunrises and sunsets to watch, and one can see the storms come and go, with the waves dashing into the whitest of foam against the rocks (Fig. 59), or rolling high upon a sandy beach.

In fact, the water, the sky, and the coast are always changing in appearance. This is true of the lake shores, too; but the ocean is so much larger than the greatest lake, that the scenery on the seashore is far grander than that on the lake shore.

For these reasons many people go to the seashore in summer, just as others go to the mountains or to the lakes. There they spend their

known. Coney Island and Asbury Park are two such resorts near New York City, and Atlantic City is another near Philadelphia. Can you tell anything about any one of them?

Where the winters are warm, as in the South, the seacoast is a *winter resort*. Many persons spend a part of the winter on the warm southern coasts or on small islands in the sea. Some of these, like Bermuda, lie far out in the ocean. At these winter resorts there is no frost or snow. Flowers blossom all winter, and people dress in light clothing, enjoying themselves out of doors, while at their own homes the ground is covered with snow and the weather is bitterly cold.



FIG. 60.—Hundreds of people bathing on the sandy beach at Atlantic City, New Jersey.

time climbing over the rocks, walking upon the clean, sandy beach, bathing in the cool salt water (Fig. 60), and looking at the scenery.

Many houses, and even cities, have been built at the most attractive places along the seashore. There are large hotels for the visitors which are often crowded in summer, but few people are found at these summer resorts during the winter.

Resorts of this kind are very common near large cities, and some of them have become well

Different parts of the ocean have different names. For instance, the *Atlantic Ocean* is the part lying between the United States and Europe, where the English, Irish, Germans, and other peoples live. We buy many articles from these peoples, such as linen and woolen cloth, sugar, silk, oranges, and olives; and they likewise purchase articles from us, such as cotton, wheat, meat, iron and steel goods, and

leather. Hundreds of millions of dollars' worth of these articles are sent across the ocean every year. Thousands of passengers also cross the ocean every year, some coming to this country to live, others

men are engaged in it. A single large steamship may employ five or six hundred men, and carry as many as three thousand passengers. Many of the ships are great steamers, each costing mil-

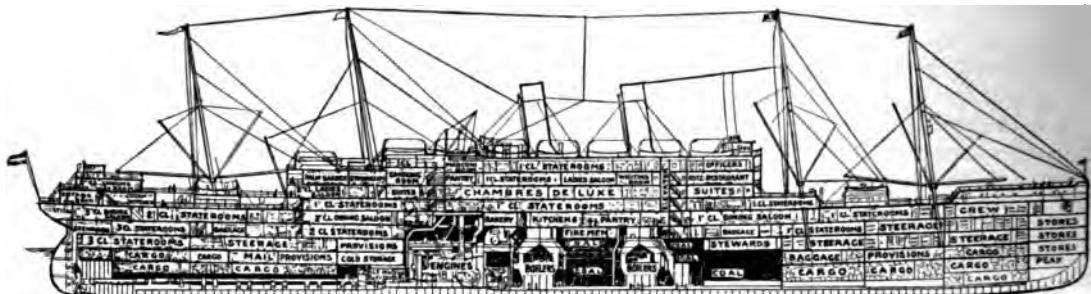


FIG. 61.—A section through one of the largest ocean steamers—the *Kaiserin Auguste Victoria* of the Hamburg-American Line. Note the position of the engines, where the coal is stored, the places for the cargo, passengers, etc.

going to Europe to travel, or to visit friends. The fastest steamers need only five or six days for the voyage.

Every part of the ocean is a great highway, and thousands of ships are always traveling upon it in all directions, carrying people, fruit, iron, different kinds of machines, mail, and many other things (Fig. 61). Although there are so

lions of dollars. Some of these travel at the rate of twenty miles or more an hour; others are sailing vessels pushed along by the wind, going fast when the wind blows hard, and hardly moving at all when it is calm. Many of the ships used on the ocean are far larger than vessels upon lakes, and they sink deeper into the water. The largest, when loaded, reach down thirty feet or more below the surface.

One of the difficulties that ships meet is in loading and unloading the goods that they carry. Wagons can be driven alongside a rail-way car and be quickly filled or emptied. But a large ship sinks down into the water so many feet (Fig. 62) that it is difficult to find a place where it can come close

to shore. If it should strike the bottom, it might be wrecked. Besides this, a boat cannot load and unload where there are large waves.

Again, upon both lakes and the ocean,

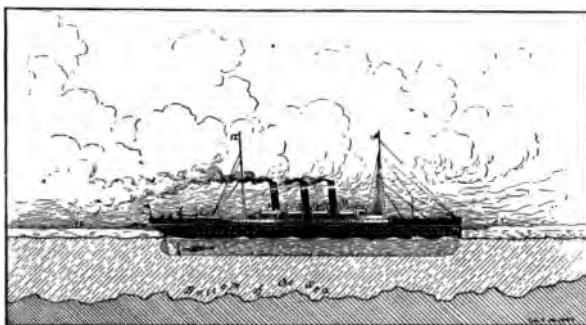


FIG. 62.—A picture to show how deep a large steamer sinks into the water.

many ships, the ocean is so large that a person may sail for days upon it without even seeing another ship.

Ocean navigation is, therefore, a very important business, and thousands of



FIG. 63.—The great storm waves on the open ocean.

vessels meet with dangers of many kinds. Storms are often severe, and the waves are so high that sometimes they sweep over, and for a moment almost cover up even the very large vessels (Fig. 63). When far out from land, large, well-built ships are not in serious danger in such weather, but smaller vessels, especially those that are old or poorly built, may be destroyed.

When approaching land, however, sailors of all vessels must be careful. The shores of large lakes and of the ocean are often quite irregular, and the depth of the water may change very quickly. In some places there are dangerous shall-

lows, in others hidden rocks, or *reefs*, that lie near the surface (Fig. 64).

There are also currents that may float a vessel out of its course; and fogs are often so dense that a person can see only a short distance ahead. It is then very easy to lose one's way at sea. In addition to all this, strong winds and high waves may drive a ship in the wrong direction, in spite of all that can be done to prevent it.

Not all these difficulties and dangers can be overcome, but much How such difficulties and dangers are met is done to make shipping both easy and safe. The irregular shape of the coast itself helps



FIG. 64.—The wreck of an ocean steamer that ran aground in shallow water during a storm.

toward this end. Very often the land partly surrounds a body of water, as in

1. Harbors Fig. 68, forming what is called a *bay*. Some of these bays are very large, being even hundreds of miles long, but many more are quite small. Many of the small bays have an

Thus a convenient and safe way is found for handling goods that are carried on vessels.

Harbors are so important that they are sometimes made on coasts where there are no good natural harbors. This is very expensive work, but it pays. Walls of rock are built in such a way as nearly to inclose a body of water, much as the water of a bay is inclosed by land. Such a wall is called a *breakwater* (Fig. 66), because it breaks the force of the waves and prevents them from entering the space behind.

It often happens that harbors are not as deep as they need to be. The vessels now used are much larger and sink deeper into the water than those formerly used. On that account many harbors that were once deep enough are now too shallow. All the time, too, the waves and tides are bringing



FIG. 65.—Rio Janeiro harbor.

opening large enough for vessels to enter easily, but small enough to shut out most of the fierce waves. If the water is deep, as is often the case, such a small bay makes a fine *harbor* (Fig. 65); that is, a place where vessels may enter and be protected from storms and waves.

For the purpose of loading and unloading ships, piers of wood or stone, called *wharves*, are built from the shores of the harbor out into the deep water. Even large vessels can be firmly fastened, or moored, to these wharves, and wagons can be drawn out on them close to the side of the vessels.



FIG. 66.—Breakwaters built at Chicago to form a harbor where ships may be safe from the waves.

sediment that settles in the harbors, slowly filling them up.

Vast sums of money have to be spent, therefore, in deepening harbors. The loose sand and mud are scraped out by dredges; but when the bottom is solid rock, it has to be blasted out. This work is of so great importance to so many people, that the United States govern-



FIG. 67.—A lighthouse built on a small island at the tip of a cape.

ment spends millions of dollars every year in doing it.

So long as a ship lies in a good harbor, it is safe from most dangers. But when **2. Lighthouses** it is outside, on its way **and light-ships** from one harbor to another, dangers are ever present. Did you ever stop to think how a vessel finds its way on the great ocean?

While a ship is out of sight of land, its officers must guide it by the position of the sun or of certain stars, using the compass and other instruments. But during storms and foggy weather, the winds and currents may cause even a large steamship to drift far out of its course. Then as a ship approaches land, the chief help is from the *lighthouses* (Fig. 67), which are built in many places along the coast.

Often the land extends out into the water, forming what is called a *point* or a *cape*, or if large and almost surrounded by water, a *peninsula* (Fig. 68). Lighthouses are placed far out on such points or

capes or peninsulas, or on islands near the mainland, so that their lights may be seen a long distance over the water. They are also built elsewhere, wherever the danger requires.

In some places there are dangerous shallows, or *shoals*, where it is impossible to build a lighthouse. In such cases, ships with lights on their masts, called *light-ships* (Fig. 69), are securely anchored near by to give warning to sailors.

When the captain sees the light of a lighthouse or light-ship, he knows that he is nearing land and must be very careful. How can he tell which light he sees when there are so many light-



FIG. 68.—Find here and describe a harbor; a bay; a point; a cape; a peninsula; an island; an isthmus; a strait.

houses? That is not difficult, for the lights are not all alike. Some are white, others red; some give a steady light, others turn around and, as they turn, send out flash after flash. There are many different kinds, and the maps, or *charts*, that all ships carry, tell the captain where each is placed. He also knows the special kind of lighthouse to be found at the entrance to the harbor for which he is bound.

In case of heavy fog, when the lights cannot be seen, powerful horns and whistles are

might be wrecked. It is necessary, therefore, that the channel be clearly marked. This is done by placing hollow iron buoys here and there. These float on the surface, but are anchored firmly in their places. They are guide-posts to the sailor, pointing out the way.

Dangerous rocks and shoals are also marked by buoys; and many of these are so made that they send out a shrill whistle, or ring a bell every time they are moved by the waves. On this account they are called *whistling buoys* or *bell buoys*. Have you ever seen any of these on the water?



FIG. 69.—A light-ship on which men live, keeping the light on the mast burning at night, and the fog whistle blowing in foggy weather.

blown for a warning. The lighthouses and light-ships are well provided with these, and they are blown every few seconds, or minutes, according to the need. When sailors approach the coast during foggy weather, they always listen for the sound of the fog horn.

By such helps as these a vessel finds its way to the entrance of its own port. What a lonely life those people who live in the lighthouses and light-ships must lead, attending to the lamps and giving warning in the fogs! But how important their work is in saving ships from destruction on the wave-beaten coasts!

The entrance, or *channel*, to a harbor
is often narrow, and sometimes on each side there are
reefs and shoals on which a vessel

huge waves, and clamber up the side of the ship. It seems a wonder that he is not washed into the sea, and that his small boat is not dashed to pieces against the sides of the big vessel.

In spite of all the care that is taken to guide ships safely into harbors, one is now and then wrecked on the coast, especially in foggy and stormy weather (Fig. 64). Then, of course, the lives of sailors and passengers are in danger. Hence it is important that some means be provided for saving shipwrecked people. This is done through life-saving stations. Here and there along the coast such stations are found, where several men spend their time in keeping a sharp lookout for shipwrecks, and in going to the rescue. At such times they boldly launch their lifeboats through the surf and perform many acts of bravery.



FIG. 70. — Ships at the wharves in New York harbor.

A harbor is also called a *port*, and a city on a harbor is called a *seaport*. Seaports often grow to be great cities. New York City is an example; it is the largest in North America, and the second in size in the world. Philadelphia is another example; Boston and San Francisco are also seaports. Can you name any others?

The fact that each of these great cities is located on a good harbor is one important reason for its size. The ocean connects a good harbor with all parts of the world, and if the country back of the seaport is fertile and thickly settled with people, the port becomes a gateway for travel and for the shipping of goods. To such a port vessels may come by

hundreds (Fig. 70), bringing goods that are wanted, taking others away, and carrying passengers back and forth. Hundreds of vessels may be seen in New York harbor at all times, and every year many thousands of them enter that port alone.

When studying the lesson, it is important to know that not all the sentences in the text are to be remembered alike, for they are not all of the same value. *About how to study* Neither are the paragraphs all of the same value, nor the pages. On the contrary, in any text there are always some sentences, paragraphs, and pages that are far more important than others, and one of the principal things to do in studying a lesson is to discover what the most important parts are.

For instance, on pages 44 and 45, telling about the size of the ocean, there are more than a score

of sentences, and seven different paragraphs. What are the most valuable parts? They are not the first paragraph, nor the last, for both of these could be omitted and the main thought would remain fairly clear. But look at the second and the sixth paragraphs. These two contain the principal fact. Read them to see what it is. The other paragraphs are less important, aiming merely to help make this main thought plain. They can be remembered most easily, too, by thinking of the most important fact.

In all study of the text, it is best to find the most important statement as quickly as possible, and then think of the others along with it, in order to hold it the more firmly. To test this, pick out the one or two main sentences in the paragraph about the value of the ocean in furnishing water for rains. Do the same with other parts of the text.

Definitions An *island* is a body of land entirely surrounded by water.

A *peninsula* is a body of land almost surrounded by water; the word means "almost an island."

A *cape* is a small body of land extending out into the water.

A *bay* is a large body of water partly inclosed by land.

A *harbor* is a small body of water so shut in by land, or by breakwaters, that vessels entering it are protected from winds and waves.

1. Give proofs that the ocean is very large.
2. How is the ocean of value in furnishing water for rains? 3. Of what **Review Questions** value is it in furnishing food?
4. What is its value as a pleasure resort?
5. How is it valuable for navigation?
6. What difficulties and dangers do vessels meet on the ocean?
7. State the main facts about harbors.
8. About lighthouses and lightships.
9. About buoys.
10. Pilots.
11. Life-saving stations.
12. Why do seaports often become large cities?
13. What is an island? A peninsula? A cape? A bay? A harbor?

1. What might be the effect, if there were much less ocean and much more land?
2. Examine pictures of bluefish, herring, and halibut in the dictionary, and make a drawing of each. Find the real fish at some fish market or elsewhere.
3. In what direction would you go to reach the ocean at the nearest point? Find out how far it is.

4. Have some one tell you about a voyage across the ocean.
5. Have some one tell you about a visit to a summer resort on the seashore.
6. Read the description of the storms on the ocean, found in the story of Robinson Crusoe.
7. Do you know of any views that are made more beautiful by the presence of water? If so, where are they? Describe them.
8. Which is probably the most important use of the ocean? Why?
9. Which is probably its least important use? Why?
10. Make a drawing illustrating island, peninsula, cape, bay, and harbor.

III. THE AIR

Resting upon the solid earth is the air, or, as it is often called, the *atmosphere*. It surrounds the ~~Extent of the~~ earth completely, much as ~~atmosphere~~ a cover surrounds a ball, and it extends upwards many miles above our heads.

This air cannot be seen, though we can see birds, and sometimes balloons, floating about in it, much as fish float in water. We know that air is all about us, because we can feel it striking against our faces and hands whenever the wind blows; and when it blows very hard, the air may move with force enough to overturn trees and even houses.

The air is of the greatest importance to all plants, animals, and people. It is even more important than the heat ~~The importance of air~~ and the soil, about which we have already learned. Plants ~~to life~~ and animals cannot live without it; and we ourselves cannot live more than a few minutes, if we do not have it to breathe. Drowning means nothing more than sinking under the water, where there is no air to breathe.

The air is of great use to us in still another way. Without it there could be no fire; for wood, coal, and gas cannot burn without air. So without the

air we could have no light from kerosene or gas, no fire for cooking or heating, and no steam for running factories and engines.

The movements of the air, which we call winds, are of great importance, for



FIG. 71.—A sailing vessel driven through the water by the wind blowing against the sails.

the winds do work of many kinds. For example, they drive sailing vessels through the water (Fig. 71), and they turn windmills, which are often used to pump water from wells. They also remove smoke, dust, and foul air from crowded cities.

Far more important than this is the work the winds do in carrying water from place to place over the earth. The air takes up water from the ocean in the form of vapor, which we cannot see, and the winds bear it about, sometimes a few miles, sometimes hundreds and even thousands of miles. The winds carry the vapor in all directions, and often hold it for many days before letting it fall.

It requires an enormous amount of water to keep the soil damp, the lakes full, and the rivers flowing; far, far more is needed than all the wagons, boats, and trains in the whole world could

haul. But the winds do that vast work very easily, and much of the time very quietly. Thus it is by the help of the winds that the rocks are made wet and changed to soil, that plants are able to grow, and that animals and people are furnished with water to drink.

What causes the air to move, and do such a mighty work? Heat has much to do with it. If ^{The cause} you watch smoke in a ^{of winds} room where there is a lighted lamp, you will see that it moves toward the lamp, and then, being heated, rises above it (Fig. 72).

In the same manner the air in a room moves toward a hot stove, and then, being heated, rises above it. This is why in winter, when there is a hot fire, the air near the ceiling of a room is much warmer than that near the floor and at some distance from the stove.



FIG. 72.—Smoke of a burning match rising above a lighted lamp.

The reason for this upward movement of the air is first, that air is made lighter when it is warmed; and second, that the colder air all

around, being heavier, crowds in and pushes the warm, lighter air upward. The warm air is forced upward just as a light cork that is sunk in water is forced to the surface by the heavier water all about it.

The movements of the atmosphere that surrounds the earth are quite like those of the air of the heated room. If the atmosphere is warmed in one place, cool, heavier air rushes in and pushes it up. That causes wind, first toward the warmer place, and then upward.

For example, people on the seashore often enjoy a cool sea breeze on hot summer days. This is because the hot sun warms the land more than the water; then the cooler air from over the sea blows in toward this warmer place. It is these cool sea breezes that greatly help to make the seashore a pleasant summer resort.

Such differences in the warmth of the air are the main cause of winds everywhere. Winds that blow even hundreds of miles in one direction are caused in much the same way as the very gentle draughts about a lamp or a stove. What wonderful results follow from the fact that there are always some places warmer than others!

Water is always rising from the ocean surface, as well as from rivers and lakes.

How the air is able to take up water In fact, enough water to fill thousands and thousands of barrels is leaving the ocean every second and floating away in the atmosphere; and at all times there is enough water in the air to fill many large lakes. What causes so much water to rise into the air? And why can we not see it there?

You have no doubt watched a kettle of water boil, and have seen that "steam"

rises from it. Perhaps you know, too, that if it boils long enough, all the water will boil away, leaving the kettle quite dry. All the water in the kettle has then passed into the air, where it cannot be seen.

The reason for this is that heat has changed the water, which is a *liquid*, into a *gas*, which, like air, has no color and cannot be seen. This gas is called *water vapor*, and it is so light that it floats about in the air. That explains how the air is able to "take up" water and carry it about without our being able to see it.

It is not necessary, however, to boil water in order to change it to vapor. All over the earth, wherever there is water, vapor is rising into the air every minute. You can prove this for yourself by noticing that muddy streets and wet clothes soon become dry, even in winter. Or you can place a shallow pan of water on a table and observe, after some days, how much of it has gone.

People say that the water has *evaporated*, which means simply that it has changed to vapor. It is in ~~the air to give back this water~~ this way that so vast an amount of water is always rising from the ocean into the atmosphere. Perhaps after ~~many~~ days, and after traveling hundreds of miles from the ocean, the air gives back some of its water vapor in the form of rain. What causes it to do this?

Have you ever noticed a glass, or a pitcher of ice water, "sweat" (Fig. 73) on a hot summer day? The water that collects on the outside of a glass of cold water has not leaked through, for there are no holes in the glass. What has really happened is that the air around

the cold glass has been cooled by it, and this has caused the vapor in the air to collect in drops on the cold surface of the glass. Drops would gather, or *condense*, just the same on any cold glass, even if no water were in it.

The window panes of a kitchen are often covered with drops of water from vapor, which rises from the kettles and is condensed into a liquid again on coming close to the cold glass. The vapor in your breath will be condensed in the same way when you breathe against a cold window pane.

From these facts you see that when air loaded with vapor is cooled, some of the vapor is changed back to water.



FIG. 73.—Drops of water that have gathered on the outside of a cold glass on a hot summer day.

are usually "muggy," and muggy air is really air with much water vapor in it.

There are several different forms that the vapor in the air takes when it changes to water. For example, when



FIG. 74.—Clouds that have formed on the mountain sides as the damp winds are chilled by the cold mountains.

Heat will cause water to change into vapor, and cold will change it back again.

There are several ways in which winds may be cooled. You know that mountains are colder than the lower lands (p. 25). Therefore, winds

you breathe into the air on a cold, frosty morning, your breath forms a little cloud, or *fog*. The vapor is cold air has made the vapor condense in your breath change to tiny drops of water, so small that you cannot see a

The forms into which vapor is condensed

single one, though hundreds of them together make a thin mist. You have, no doubt, seen fogs in valleys, on lakes, or over the ocean. These are always made of tiny drops of water condensed from vapor in the air.

We have learned that water may be either a liquid or a gas. We know, too, that it may also be a solid, for ice is the solid form of water. When vapor condenses at a temperature below 32°, or the *freezing point*, it takes the solid form. Then either *snow* or *hail* is formed instead of rain. Have you ever ex-



FIG. 75.—A view from a mountain top, looking down on the clouds.

Most clouds are also made of tiny fog and mist particles. These particles, too, are caused by the cooling of the air, as when winds blow against mountain slopes. When climbing a mountain one may pass through such a cloud, and it then seems to be no more than a fog or a mist. Viewed from below, however, it is seen to be a cloud; and if you go high enough, you may even climb above it. Then, looking down on its upper surface, you can see clearly that it is a cloud (Fig. 75).

The *raindrop*, which falls from the clouds, is another form of condensed vapor. Raindrops commence as tiny mist or fog particles, but as they grow in size, they become so heavy that they can no longer float. They must then fall to the earth.

amined the beautiful snow *crystals*, or *snow flakes* as we call them? (Fig. 76).

Drops of water often collect at night on the cold ground, on grass, and on leaves. This we call *dew*. The dew gathers because the ground

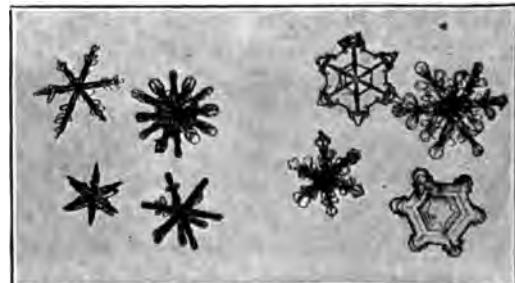


FIG. 76.—Photograph of snow crystals, showing their beautiful starlike forms.

and plants cool quickly after the sun sets. These in turn chill the air next to them, until some of the vapor in it changes to water. If the temperature is below the freezing point, *frost* is formed instead of dew.

Our weather depends very much upon our

winds. Winds from certain directions, as from the ocean, are likely to bring rain, while others bring none. You would find it interesting to observe this for yourself. If you should keep a record every day of the direction of the wind and the kind of weather it brings, you would soon learn which of your winds cause rain, and which cause fair weather. You might also notice the clouds, and look at the thermometer each day, to see what the temperature is. By this means you can learn something about the weather near your home. A record of this kind, which is called a *weather record*, might be kept somewhat as follows:¹—

DATE	TIME OF DAY	DIRECTION OF WIND	KIND OF WEATHER	TEMPERATURE
March 10	8 A.M.	Southeast	Cloudy	55°
March 10	6 P.M.	Calm	Gentle rain	60°
March 11	8 A.M.	Strong west wind	Clear	30°

¹ Some teachers may consider it profitable to introduce at this point an elementary study of the daily weather maps, at least to the extent of reading the predictions, and noticing how nearly correct they are.

- What is the extent of the atmosphere? How do we know that there is air all about us?
- Of what importance is air to life?
- What work do the winds do?
- State the cause of winds.
- How is the air able to take up water?
- What causes the air to give this water back?
- Into what forms is the vapor in the air condensed?
- What do you understand by a *weather record*? How would you keep one?
- Tell what happens to a raindrop from the time it leaves the ocean to the time it returns to it.

- Name other ways besides those mentioned in the text in which air is important.
- Why does smoke go *up* chimneys?
- Make a drawing, showing how a hot stove causes a movement, or circulation, of air in a room.
- How many examples of evaporation can you observe about you?
- What examples of the condensing of vapor can you find?
- Why do clouds often surround mountain tops?
- What winds usually bring your rain?
- Where have they probably obtained their vapor? How far is that from you?
- Prove that air is a real substance by thrusting an open bottle upside down into a pail of water.

SECTION III. INDUSTRY, COMMERCE, AND GOVERNMENT

I. INDUSTRY AND COMMERCE

IN your study about the Eskimos you found that they live in a very simple way. If an Eskimo needs a house, he builds it. If he wants food, he catches a fish or kills a seal. If he needs clothing, he takes a sealskin and makes it. If he wishes to have a sledge, or a boat, he makes that. Thus, he depends entirely upon himself for his food, clothing, and shelter.

The Eskimo does not think of going to a store to buy anything, for such a thing

as a store is unknown to him. He has no money, because he has no use for it; there is nothing he can buy with it. He has never seen a horse and wagon, nor a railroad train, nor a city; nor does he know anything about post offices or the telephone or the telegraph.

Not many hundred years ago there were no stores in this country where we live. Then, like the Eskimo, every man had to depend largely or wholly upon himself for his food, clothing, and shelter.

Our first white settlers came from Eu-

How our early
settlers sup-
plied their
wants

rope, and they made their homes along the eastern coast, because that was the 1. Location of first land they came to homes after crossing the Atlantic Ocean. Soon people, called *pioneers*, began to push into the wild country farther west. Often several families settled together, many miles away from other people; but sometimes a family went off alone and made a home ten or fifteen



FIG. 77.—The log house of a pioneer.

miles from the nearest neighbor. Most of the United States was first settled by such families as these.

Usually the first thing they had to do was to cut down trees in order to make 2. House and room for a house and furniture garden. The house was built of logs, and mud was used to stop up the cracks (Fig. 77). The house often had no floor except the earth, and only a single room. The beds were made of posts driven into the ground and joined together with cross-pieces. The chairs were three-legged stools, and the table was part of a log supported upon four legs.

Wheat was raised for bread; and corn, which often took the place of wheat, was made into corn bread. 3. Food Tea was often made from roots found in the forest, and most of the meat was obtained by shooting wild game.

Many families kept sheep, and the wool was made into yarn, blankets, and cloth. If a boy needed a new suit 4. Clothing of clothes, his mother might weave the cloth, cut it out, and sew the parts together. Such a suit was called *homespun*. Or if there were no sheep, the clothing might be made out of the skins of animals. Many boys wore trousers made from deerskin, and used moccasins for shoes, when they did not go barefoot.

There were no schools, and whatever the children learned from 5. Schools books was generally taught by the mother. There was little

time for reading during the day, and the only light at night was that which came from the burning wood in the great fireplace. Ink was made from some colored root, such as brier root, and pens were cut from the quills of fowls. There were few books, however, and there was little time for reading or writing.

As a rule, each man raised more of some things, such as wool, wheat, or hogs, than his own family needed. 6. Necessary journeys There were other articles that he had to buy, such as powder, sugar, salt, pepper, and coffee.

Sometimes a pioneer stayed at home and bought nothing, or he waited till some trader

came along and then exchanged skins for the things that he wanted. More likely, however, he made a journey, once or twice a year, to the nearest town, which was perhaps a hundred miles distant. He then took with him the products of the farm and exchanged them for such articles as he needed.

These trips had to be few, not only on account of the distance, but because the roads were rough and muddy. It might take two weeks to haul a load of grain to town and bring back the things he wanted. The journey was dangerous also, for in those days savage Indians often lurked in the forest.

The life that such pioneers lived was, in many ways, as independent as that of

7. Independence of such life the Swiss Family Robinson, or of Robinson Crusoe. Of course, when a man started out into the wilderness, he took some articles with him, such as a gun, with powder and bullets, some clothing, and some blankets. But when he reached his new home, he found himself alone, with no one to look to for help. Then, like Crusoe, he was forced to rely upon himself. In spite of the trips to the cities, most of the things that a family used had to be obtained by the family itself, and each member had many kinds of work to do. In some parts of the world, where there are few settlers, people still live in this manner.

Our country was settled so rapidly that each family soon had neighbors. A **8. Dependence on others, later** number of people would build their houses near

and one of them would start a general store. Then the families living some distance away would come to this center to trade, bringing their farm products and the skins of animals, and taking back other articles.

As the number of people in such a place grew larger, each man did fewer kinds of work. Perhaps one of them built a sawmill, and sawed lumber for the others when they needed it. Another spent part of his time at carpentry work for his neighbors. A third built a gristmill, and ground grain into flour.



From Inman's "The Old Santa Fe Trail," by courtesy of the publishers, Crane & Company.

FIG. 78.—A trapper and his horse.

A fourth made shoes a part of the time, or served as a doctor, or taught school, along with other work.

A few of the men might spend all their time at one kind of work. For

example, the blacksmith might be kept busy shoeing horses, and repairing wagons, while the storekeeper did nothing but buy and sell goods. Now and then the storekeeper would make trips to the nearest city, to buy such supplies as he thought his neighbors would require, like matches, boots, shovels, axes, calico, and drugs. These he would keep in his store for sale. Sometimes he received money for them, but more often he took eggs, meat, wool, and grain for his pay. These he would send to the nearest large town for sale.

In this way it was no longer necessary for each farmer himself to go to a distant town or city, for he could usually get what he wanted from the store. He could also sell his products to the storekeeper, and with the money received pay the blacksmith, or doctor, or teacher. Thus each man came to do fewer things for himself, and to depend more and more upon others for many things.

Each year more people came to this country, and the villages grew to be towns. How our wants and cities, with many mills are supplied and factories. Then people in our country began to live as we now do. That is, not a few men only, but every man began to do only one, or at most, very few kinds of work.

At present some men do nothing but farm; others, nothing but dig coal or iron ore from the mines. Some spend all their time at fishing; others spend it in making cloth, or needles, or shoes. The work that one man does may be of a very simple kind. For example, he may only drive a team, or make screws, or saw shingles, or tie up sacks of flour, or put in the heads of barrels.

With the money received for such

work he buys the many things he wants, and these articles have been made by hundreds, perhaps thousands, of other people. Think how many men have had a share in the work of preparing the food that you have on your table each day, or the shoes that you wear, or the house in which you live! How different our ways are from those of the pioneers!

As a rule, each town or city is especially interested in one, or, at most, a few kinds of business. For example, a town near the forest is likely to have an important lumber industry.

*Special kinds
of work for
each town
or city*

Another, in the midst of mountains, may have mining for its special work. A third, near great wheat fields, may have immense flour mills.

The articles that these cities produce are sent away in all directions; and other things, that the people need, are brought to them from the hundreds of places in which they are produced. In what kinds of work is your town chiefly interested? What are some of the articles that are brought to it?

When each man does only one kind of work, and depends upon others for most of the things that he needs, good roadways, or highways, become of very great importance. This is especially true when goods have to be carried long distances, as in a large country like ours. If we live in the East, and the best wheat is raised more than a thousand miles away, in Dakota, it is of little use to us unless it can be brought to us. If the best shoes are made in New England, they are of little value to the people of the South, unless they can be easily



FIG. 79.—A pack train carrying supplies up a mountain trail in western United States.

shipped there. It is of the highest importance, therefore, that we have good highways leading in all directions.

When a country has not advanced very far, the highways are usually poor. For example, the **2. Trails** routes of travel in some of the regions of Africa are merely paths that have been made by goats and barefooted people, and are less than a foot wide.

The Indians in this country, likewise, had only narrow paths, or *trails*, for roads. They often used the trails made by the bison. Wagons could not be drawn over these, and goods could be carried only on the backs of men, or of horses. A number of horses carrying packs formed a *pack train* and these trains may still be seen in some places (Fig. 79).

The pioneers at first had only trails, and one of their hardest tasks was to **3. Roads of pioneers** cut roads through the dense forests. Trees had to be cut down, stumps and stones removed, steep places leveled, and swampy places



FIG. 80.—Horses and wagon fording a swift mountain stream.

horses to draw even an empty wagon. Our roads are being rapidly improved, however, and some of the states are spending large sums of money each year in making them smooth, hard, and level. Perhaps you have seen some of this work and can tell how it is done.

In cities there is so much hauling of heavy loads that the streets must be paved. For this purpose bricks are often used, or paving stones, which are larger than bricks; and sometimes asphalt, or blocks of wood are used. But the

filled in. Streams had to be crossed by wading across, or *fording* (Fig. 80) them in places where the water was shallow. This was often difficult, and even dangerous, especially when the streams were swollen after heavy rains; therefore bridges were built as soon as the people were able to do so.

Many of our country roads are still very poor. They are rough or steep in places, and at some seasons **4. Our roads** of the year the mud is so deep that it is difficult for a team of

most common pavement, especially in the country, is called *macadam*, after the Scotchman who invented it. It consists of broken stones, scattered to a depth of from six to ten inches, and pressed together as closely as possible. What kinds of pavement, if any, are to be found in your neighborhood?

You have already learned that lakes and rivers are important for travel and
 5. Rivers, lakes, and canals for transportation of goods.
 When the pioneers were settling the Mississippi Valley, it was the custom to carry many

the river. Canals have also been made to connect lakes and rivers with one another. Much money has thus been spent in improving the natural waterways of the United States.

In our country, railroad trains have largely taken the place of wagons, and also of river boats, as carriers for long distances. This is because trains are so much faster than wagons or boats. Even on the finest of roads, wagons can seldom be drawn more than forty miles a day. Boats can travel somewhat faster; but trains can go from five hundred to one thousand miles per day. Moreover, they carry both passengers and freight far more cheaply than these could be taken in wagons.

As we ourselves travel on passenger trains, we are apt to think that the chief business of railways is to carry people; but that is not usually the case. Their main business is to carry freight,

such as grain, cattle, groceries, coal, oil, and machinery (Fig. 81). For this reason on most railways there are many more freight trains than passenger trains; and there are many more cars in each freight train.

The fast trains also carry express packages, newspapers, and letters. Before railways were built, the mail was carried in stage coaches, or on horseback. Now many passenger trains have one or two cars that are used for this purpose alone; and most of our mail is carried in this way.



FIG. 81.—Freight yard of a railway, showing a large number of freight cars loaded with coal and other freight.

of their goods down the Ohio and Mississippi rivers, a thousand miles or more, to New Orleans for sale. In many parts of our country the rivers were at that time the best routes of travel. These *waterways* are still generally the cheapest, and every year the government spends great sums of money in keeping them clear of logs, stones, and mud, so that they may be in good condition for boats.

Where there are waterfalls or rapids in rivers, canals have sometimes been built so that boats may go up and down

The ocean is the greatest highway of all, connecting us with the most distant countries, as well as joining different parts of our own land (Fig. 82). Before the invention of the steam engine, the ocean was so difficult to cross that it kept the people of different countries apart. Sailing vessels were then the only ships in use, and they were very slow. The invention of the steam engine made steamships, as well as locomotives, possible. Now thousands of steamships carry passengers, freight, and mail rapidly by water, just as trains do by land.

Thus people have improved upon the trail, the stagecoach, and the sailing vessel, until all parts of the world are brought into close touch with one another.

The people of the United States are busy **The great occupations** producing many things,

and sending them from place to place. Although each man does only one kind, or, at most, very few kinds of work, there are scores of different kinds all together. Most of these, however, are included under seven great occupations. These are (1) *agriculture*, including farming, gardening, and the grazing of cattle, sheep, and horses; (2) *fishing*; (3) *lumbering*; (4) *mining*; (5) *manufacturing*; (6) *trade*, or buying and selling; and (7) *transportation*, or the carrying of goods.

1. The first five of these The greatest of these industries is *agriculture*, about which you have already studied in the

first and second sections of this book. One man out of every three in the United States is engaged in agriculture of some kind.

Fishing is far less important. Still, along the shores of the lakes and the ocean, there are thousands of men who spend all their time at this work.

Lumbering is not carried on in as many places as it used to be, because many of the forests have been cut down. Yet, every house you see is built partly



FIG. 82.—Vessels coming and going in New York Harbor.

of wood on the inside, and many are made of wood on the outside as well. Besides this, wood is used for many other purposes, as for making furniture and paper. From this you can understand that great numbers of men must be engaged in cutting down trees and sawing them into lumber.

Mining is a great industry employing hundreds of thousands of men. There are many kinds of mines, the most important of which are coal, iron, copper, gold, silver, and lead mines. *Quarrying*, or taking out stone from the earth, may be considered a part of mining.

Manufacturing is a still more important industry than mining. Note how many things about you have been carefully made somewhere. This book that you are reading is one example. The desk, at which you sit in school, much of your food, and your clothes, are other examples.

These *five* occupations serve mainly to supply proper *food*, *clothing*, and *shelter*. They are often called the *five great industries*, and you will find them mentioned again and again in your later study of geography. These *five*, however, merely *produce* articles. The first four produce the raw materials, or *raw products*; the fifth changes, or *manufactures*, these raw products into articles ready for use.

There are thousands of people engaged in shipping the raw products and manufactured articles, as we have just seen in our study of highways. If there were not, these articles would be of little use. Nor would they be of much use if there were not other thousands of people buying and selling them in stores, so that we can get them when we wish.

There are, therefore, the two other occupations of (1) *trade*, or buying and selling; and (2) *transportation*. These two together are called *commerce*.

The commerce within our country is called *home*, or *domestic commerce*. The commerce between the United States and other countries is called *foreign commerce*. In your study of geography, you will find that domestic and foreign commerce are very important.

No doubt you can think of some occupations, such as teaching, that do not belong either under commerce, or under any one of the five great in-

dustries. However, the seven great occupations cover *most* kinds of work that men do; and they are the chief kinds that need to be studied in geography.

It takes much practice to discover the most important thought of a page *About how quickly*. Yet, one can get his *to study* lessons more easily by learning to do that.

Here is an example. The first page of this chapter tells how the Eskimo supplies his wants. The main thought here is found at the end of the first paragraph, in the words, "*He depends entirely upon himself for his food, clothing, and shelter.*" The rest of the two paragraphs merely makes this central thought clear by giving examples, as follows: he builds his own house, finds his own food, makes his own clothing; there are no stores where he can buy anything; he has no money to buy things with, for he has no use for money; he has never seen a city; nor even a horse and wagon, nor a train; and he knows nothing about telephoning, or telegraphing, or writing for what he wants.

Here are many facts, and it is difficult to remember them until one finds the leading thought that binds all the others together. Then it becomes easy to remember most of them. Since lessons are more easily mastered by getting the leading fact quickly, stop often, after reading a paragraph, to see whether you can state its principal thought. Do this in a few words; if possible, in a single sentence. Then add as many other statements as you remember which explain the chief thought. Practice getting your lessons in this way.

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3. About their houses and furniture.
4. Their *Review Questions* food.
5. Their clothing.
6. Their schools and study.
7. Why were journeys necessary?
8. How was their life an independent one?
9. State how people later became more dependent.
10. How are our own wants supplied?
11. What about special kinds of work for each town or city?
12. Explain the importance of highways.
13. Tell about trails.
14. The roads of the pioneers.
15. Our roads.
16. Show the importance of rivers, lakes, and canals as highways.
17. Of railroads.
18. Of the ocean.
19. Name the great occupations.

20. Describe the first *five*. 21. Describe the other two.

1. What articles would you expect to find in a general store in a village? 2. How are department stores in large cities like such general stores? 3. The last syllable in the names of many towns and cities is *ford*, as Hartford, Stamford, Rockford. What does that fact suggest to you? 4. Find out more about the ways in which money is spent on rivers to make them more useful for navigation? 5. Write a story describing an early pioneer's journey to the nearest large town. 6. What men do you know who are engaged in some one of the seven great occupations? 7. Make a list of articles that you use which were brought from a distance, on the railroad or by water. Which of these belong to domestic commerce? Which to foreign commerce? 8. Is there any one of the seven great occupations that we could somewhat easily do without? If so, name it, and give your reasons. 9. How can good roads and waterways help to prevent famines?

II. COUNTRY AND CITY

The kinds of work that people are doing lead some to live in the country, others in the city. The farmer, for instance, lives in the country because he must have a great deal of land in order to raise his crops. The lumberman must live in the country where there are forests.

Persons engaged in the five other leading occupations usually live in towns and cities. Miners, for example, must have their homes near the entrance to the mines where they work; and the workers in a single mine, together with their families, often make a large town. Men who work at manufacturing must live near the factory. A single factory may employ several thousand men; and since there are often many large factories near one another, many thousands of

people may thus be brought together. These people, together with others engaged in commerce and other kinds of work, form great cities, sometimes with hundreds of thousands of persons. These cities are usually located at some point where the shipping of goods is easy, as on a river, a large lake, an ocean harbor, or a railway center.

Life in the great cities is so different from that in the country, that it will be interesting to see what some The country of the differences are. Since life in the country is very simple, and since more than half of all the people in the United States live there, we will study country life first.

A farmer needs land enough for a house, a barn, and other buildings; for a garden and an orchard; and for fields in which various kinds of crops can be raised. This means that he must have a large tract of land.

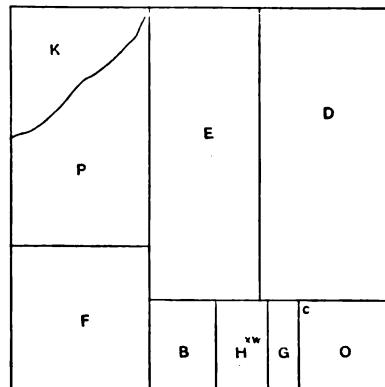


FIG. 83.—Plan of a farm in Ohio.

Figure 83 shows a plan of a farm in the state of Ohio. It includes 160 acres, which is the amount of land in many farms in that section. One side of this farm is half a mile long; and



FIG. 84.—A farmer's house and barn.

from this you can easily tell the entire distance around it. The house and yard, shown by the letter *H*, are close to the road that runs along one side of the farm. The barnyard and barn, lettered *B*, are on the left. *G* is the garden, and *O* is the orchard. The rest of the land is divided into fields, *D* containing corn, *E* oats, *F* grass, and *P* pasture. At *K* there is a small wood lot, from which firewood is obtained. Can you tell about how long and wide some of these fields are?

The house is of two stories and a

half, and is built of wood (Fig. 84). Close to it is a wood shed in which piles of wood are kept for burning. On many farms, where wood is scarce, coal is used instead.

The barn is only a short distance from the house, and is larger than the house. In it are kept the horses, cows, and other farm animals, and the wagons, plows, and other farm implements. Much hay and grain is stored there, to be sold later, or to be fed to the animals in winter when they cannot graze in the pasture.

In one corner of the orchard (at *C*) is a henhouse in which from one hundred to two hundred hens are usually kept; and near the henhouse is a pen for a few pigs. Besides these animals, there are some turkeys, ducks, and geese.

Vegetables and strawberries are



FIG. 85.—A farmer's children playing in the hayfield.

raised in the garden, and there are also small patches of raspberry, blackberry, currant, and gooseberry bushes. Besides apple trees in the orchard, there are pear, plum, and peach trees. Altogether a great many kinds of fruit are raised on the farm.

The yard about the house is large, and the grass is kept closely cut. There are several elm and maple trees in the yard, as well as some flowering bushes and flower beds, which the farmer's wife cares for with much pride.

Most of the other farms near this one are of about the same size, though some are larger and others smaller. What can you say, therefore, as to how far apart houses in the country must be?

Near the house is a well (*W*), from which the farmer obtains his water. ^{3. The farmer's water, light, and heat} On this farm the water is pumped by a windmill into a tank, from which some is piped to the house, and some to the barnyard for the animals; but on many farms the water is pumped by hand.

At night, light is supplied by lamps that burn oil. This house is heated by stoves placed in several of the rooms, though some farmhouses are heated by furnaces.

Although there are not many children on each farm, it is important that they ^{3. Schools in the country} go to school. All the children who live near enough together to attend one school may not number more than twenty-five or thirty, and even then some may have to walk several miles. On fine days such a walk is pleasant enough, but since there are no sidewalks, it is not so pleasant in rainy weather, and the walk is very

difficult when there is much snow. On account of the distance, every child usually takes his lunch along, and remains at school all day.

Since there are so few pupils, the building is generally small, with only one room (Fig. 86). There is but one teacher, and children of all ages, from six to nineteen or twenty years, study



FIG. 86.—A group of school children in front of a country schoolhouse.

and recite in the same room, and to the same teacher.

You might think that such a school could not be very good, yet some of our best-known men and women have attended such a country school. Perhaps you can name one of our Presidents, or some other great man, who once went to a country school.

In a great city, as many as twenty thousand persons are sometimes found living within a space no larger than the ^{1. The city used by a family in a large city} single farm just described. The buildings, therefore, must cover

almost all the ground, leaving little or no room for yards and lawns.

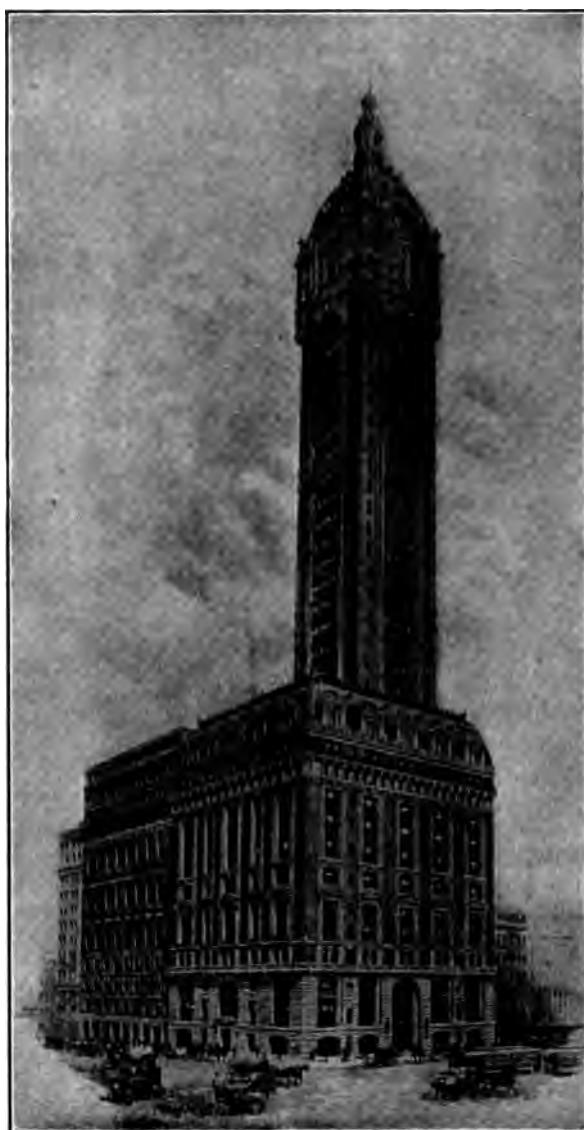
In some of the larger cities the buildings have from four to fifteen or twenty stories, and sometimes even more than that. In such a building a single family occupies only a small part of one floor, called a *flat* or *apartment*, which has from two or three to eight or ten rooms. Other families live in other flats on the same floor, and in the stories above and below. Thus several hundred persons may have their homes in a single large building.

The factories, stores, office buildings, and other places where the city people work, are also very large. Hundreds, and even thousands, of persons work in them every day. Some of the office buildings in New York City are over thirty stories high (Fig. 87).

There are, it is true, houses of two and three stories in the large cities, just as in the country. However, since the land on which such a house stands is often worth several times as much as

a large farm, not many families can afford to have such houses. With land so costly, a small barn for a horse or cow, or a garden and a chicken house, are not to be thought of. It is difficult even to take care of a pet dog, or a cat, in a crowded city. Usually there can be no yard, and the street is the only place where the children may play (Fig. 88).

It would be impossible to have wells enough to furnish water, light, and heat in the for all city the people in a city. Besides that, the water might not be fit to drink. Instead of coming from a great number of wells, therefore, the water is brought to the city, in large pipes, from some distant source such as a lake or a river. It is then led in smaller pipes through each street and into each house. When one wants water, all that he needs to do is to



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FIG. 87.—The Singer Building in New York, one of the highest buildings in the world. It is 612 feet high, has 41 stories, and there are offices even in the lofty tower.

turn a faucet, and the water flows freely; and there is enough to supply all, although thousands may want it at the same time.

Lamps for light cause much trouble even in the country. In the city, where there are so many people in one building, and where the buildings are so close to one another, lamps may be dangerous. Why? Gas and electricity usually take their place.

For heat, furnaces are commonly used. They burn coal, and heat the houses by means of steam, or hot water, or hot air. In the larger buildings, furnaces big enough to heat a great number of rooms at once are placed in the basement, and, by means of pipes, steam is carried to each room.

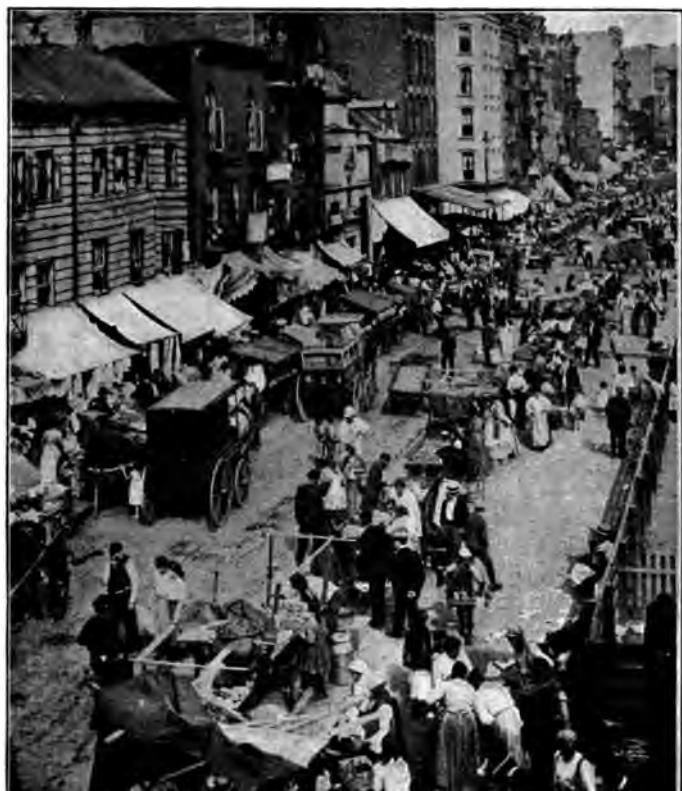
The farmer himself raises much of the food that his family needs, such as vegetables, fruit, meat, and often the grain for flour. Other things that he uses he buys at the village store. In a great city, on the other hand, little or no food is produced, so that the problem of feeding the hundreds of thousands of people who live there is a very serious one.

Trains, ships, and wagons, loaded with all sorts of food, are all the time moving toward a large city. For example, milk is brought every day in special milk trains that start perhaps a hundred miles or more away. At each station they take on cans filled with milk from surrounding farms, and in this way car after car is filled by the time the city is reached.

Most of the city people buy food at the stores in very small quantities, because they have no room in which to keep large amounts. For instance, they may buy three or four pounds of sugar at a time, or a small bag of

flour, or two quarts of potatoes. The farmer, on the other hand, has whole barrels of potatoes, apples, and turnips stored in his cellar, and often buys sugar and flour by the barrel.

From all this you can see how the city depends upon the country for food.



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FIG. 88.—A crowded street in the East Side of New York City.

If anything should prevent food from reaching a city for a few weeks, the people would starve. Even when a heavy snowstorm blocks the freight trains for a day or two, there is suffering in the larger cities.

The people are so crowded in a great city that there are often enough children in one block to fill a large school. Sometimes a thousand, and even two or three thousand

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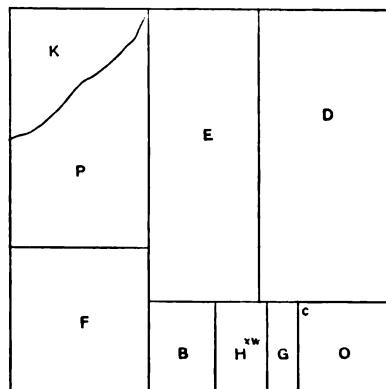


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Vegetables and strawberries are



FIG. 85.—A farmer's children playing in the hayfield.



FIG. 94.—A village nestled in a valley among the hills of New England.

Unless a town is quite small, it supplies itself with water and light in the same way as these are supplied in cities; but in most respects towns and villages resemble the country, more than they do the large city.

Review Questions

1. Which great occupations must be carried on in the country?
2. Which ones in towns and cities?
3. Explain why farmers need a large amount of land.
4. How do they get their water, light, and heat?
5. Tell about schools in the country.
6. What about the space used by a family in a large city?
7. How are the water, light, and heat obtained in such a city?
8. What about food in the city?
9. What do you know about the schools there?
10. How is transportation provided in country and in city?
11. What are some of the attractions of the country?
12. Of the city?
13. Tell about life in towns and villages.

1. Boys and girls living in the country usually have much work to do helping their

fathers and mothers. Make a list of things that they have to do. 2. Is it an advantage or a disadvantage for city children **Suggestions** that they have little work of this kind to do? 3. Make a drawing of some farm that you know, showing the buildings upon it, and how it is divided up. 4. Make a collection of pictures of buildings and streets in the city. 5. Write a composition telling whether you prefer to live in the city or country, and give your reasons. 6. If your home is in a city or large town, find out about the lighting system; the transportation; the parks; the museums; the protection against fires.

III. GOVERNMENT

Every boy and girl has heard men talk about *voting*, and has noticed **Meaning of voting and elections** how interested they often become as *election day* draws near. Do you know what is meant by voting and by election?

Suppose that all the members of your class, or of your school, wished to form a club, and to choose one of your number president. How would you go about it?

Probably the names of two or three children, who seemed best fitted for the place, would first be suggested. Then each of you would write the name of the one you preferred upon a slip of paper, and drop it into a box. After that, all the slips, or *votes*, would be counted, and the boy or girl who received the greatest number of votes would be elected.

In such a case you would be voting, and having an election at school. When you dropped the name of the one you preferred into the box, you cast a *vote*; and the *election* was nothing more than the choosing of some one for the position. Quite possibly some of you would become just as much interested in such an election as men do in their elections.

Men hold their elections in much the same way. Ask your father, or some man old enough to vote, to tell you exactly what he does when he votes.

People hold elections and vote on all sorts of questions, but usually when one speaks of voting and of elections he means the choosing of officers for our government.

We do not hold elections to decide how a farmer shall manage his farm, for it is best that he should do that about as he pleases. He builds fences, puts in certain crops, sells his grain, or feeds it to his stock, as seems to him best. So, also, the miller builds a large or a small mill, uses old or new machinery, grinds much or little corn, and makes repairs as he chooses. In each of these cases one man owns and uses the property.

There are many things, however, that no one person owns, and in which a large number of people are about equally interested. That is true, for instance, of roads. Many people drive or walk over them, but no one person owns them. The people together have to decide, or vote, where and how they shall be built and repaired, and who shall do the work. That is, they hold elections to make laws about the roads, and choose officers to carry out such laws.

The schools, likewise, are not owned by any one person, and are of great interest to everybody. So questions about the schools are also voted upon at elections.

What shall be done with thieves and disorderly persons? This is another question of great interest to everybody. Laws must be made to control such people, and officers must be selected to carry out such laws. There are many other questions that interest large numbers of people. Can you not name some of them? Ask your father, or some friend, to tell you what will be some of the questions to be voted on at the next election.

Elections, therefore, deal with matters of general interest. They provide for laws on such matters, and for the selection of officers to enforce them.

Some of the matters that are voted on at elections concern only those persons who live in a small section, as in a small town or village. For instance, the kind of streets that you shall have, and the men who shall take care of them, are questions of no special interest to people in other towns or cities, but they interest all the voters in your section.

Questions to be
voted upon by
small groups
of people

It is also very important that you have a good school building, with a large yard, and good teachers. People living at a distance have little interest in *your* school, but those who live near you are very much interested in it. The people to vote on such a question, therefore, would be those who have a special interest in it.

Thus there are many matters that are mainly of interest to the persons living in one neighborhood. They are called *local questions*, and are voted upon only by the few voters in that section. Ask some one to tell you of other local questions.

There are some matters that are of interest to the people in a much larger section.

Matters that concern the people of a whole state

For example, a railway company might charge too much for passengers and freight.

In such cases, laws may need to be passed, forcing them to charge lower rates. Since a railway may be hundreds of miles long, the people of a single town or city could do very little with such a company. In that case it would be necessary for men, living perhaps hundreds of miles apart, to unite in some way to make laws.

Again, it is important that there be buildings in which blind people may be cared for; others in which the deaf and dumb may be educated; and still others in which insane people may be kept. There must also be strong prisons where criminals may be sent. There are not many such persons in any one small section, and it would prove very expensive and difficult to take proper care of only a few of each kind. Therefore, all the people in a large section, called a *state*, unite to make proper laws, and provide

buildings and officers for the care of such people. What is the name of your state?

The voters of a state cannot, of course, all come together at one place to discuss such matters. Even if all

could make the journey at How laws are made and officers chosen for a state

a time agreed upon, there would be so many thousands that it would not be possible for all to hear those who spoke, and little business could be done. Besides, new laws are needed every year, and the voters would have to spend too much time on such work.

For these reasons it is the custom for one man to be elected to *represent* many others in the making of laws. Where there are great numbers of people, he may represent many thousands, and vote in place of them all. Suppose, for instance, that there are a million persons living in one state, and that one man is elected to represent every ten thousand. There would then be one hundred such men chosen, and it would be their duty to come together and make laws for the whole million.

Such men, being elected to represent others, are called *representatives*; and because they legislate (which means "make laws"), the whole body is called the *legislature*. Find out who is the representative to the state legislature from your district; also who is your state senator.

The city where the legislature meets is called the *capital* (which means "head city") of the state. The capital is often located near the center of the state, and it usually has a fine, large building, called the *state capitol*. It is here that the representatives hold their meetings.



FIG. 95.—The beautiful capitol building at Washington.

The chief officer of the state, who is elected to see that the state laws are carried out, or enforced, is called the *governor*. Who is your governor? He is elected by voters in *all* parts of the state, while each representative is elected by a small section of the state. There are also other state officers, such as a state treasurer, a state superintendent of schools, and judges. Some of these officers are elected by the people; others are appointed by the governor.

In large cities, laws are made through representatives, just as in states, and for the same reasons. The representatives chosen to make the laws in cities are usually called *aldermen* or *councilors*; and the highest officer, elected to carry out, or *execute*, the laws, is called the *mayor*. All these officers are chosen by the voters at elections. If your home is in a city, learn the name of your mayor and that of your alderman or councilor. Find out what some of their duties are.

The building in which these *representatives* meet, and in which the mayor has his *office*, is called the *city hall*. While the city is governed in some matters by its own laws and officers, the same as any small town, it also forms part of the state and elects representatives to the state legislature.

In our country there are forty-eight states, and there are some questions that no one state can decide alone, because the others are equally interested in them. For instance, it would be a great hindrance to trade and travel if each state made its own money, for each state might then have different coins. In that case, every time a traveler passed from one state to another, he might be obliged to take the time and trouble to exchange his money for a new kind.

Again, in case of war, the country would be weak if each state acted alone.

Questions that concern the people of the United States

Perhaps you can give some of the reasons why. Mail is another matter that



FIG. 96.—President Wilson.

concerns all the states, and there are others besides. Can you mention some?

So it is clear that we need a *United States Government* as well as state, city, and town governments. The reason for calling it the United States Government is also plain, for the *states* have really *united*, in order to have one central government for many important matters.

If the people in a single state cannot meet in a body to make laws, the people chosen for the United States certainly the people of the entire United

States cannot do so. Therefore, representatives are elected, and sent to one place, from all the states of the Union. Here they consider questions of interest to the whole nation.

The place where they meet is WASHINGTON, and this city is, on that account, the *capital of the United States*, or the *national capital*. At Washington there is a magnificent capitol building (Fig. 95) in which the meetings are held; and there are many other fine government buildings there.

The representatives from the forty-eight states of the Union form what is known as *Congress*. This corresponds to the legislatures of the state, for the congressmen make laws for the nation, as the legislators do for the state. The members of Congress are called *senators* and *representatives*.

The chief *executive officer* of the United States, corresponding to the mayor of a city, and the governor of a state, is called the *President* (Fig. 96). He lives in Washington, and his residence is called the Executive Mansion, or White House, since it is white in color (Fig. 97). Who



FIG. 97.—The White House, where the President lives.

is now President of the United States? Who was the first President? What do you know about each?

Besides these officers, who are elected by the people, there are a great many others who are appointed by the President to carry on the government work. Many live in Washington, but some, such as postmasters, live in other places.

We have seen that our representatives, and other officers, are elected by votes that are cast for them. Because the people thus have the power to make their own laws, our government is called a *democracy*. The first part of this word means "people," and the last part "government," so that

Why our government is called a democracy and a republic



FIG. 98.—General George Washington, first President of the United States.

the whole word means "government by the people." Because the people do not really make the laws themselves, but elect representatives to do that for them, ours is often called a representative government, or a *republic*.

It is often said that our form of government makes us "free and equal." People are by no means so free and equal in all countries. Under some governments, in Europe and

Asia, the people have very little to say about the laws that shall govern them. Nor do the laws protect them all equally; for some of the high officers say freely what they think, while others dare not do this. Many must obey their rulers blindly, just as little children are expected to obey their parents.

Such a government cannot be called a democracy, or a republic; it is really a *despotism*, or an absolute *monarchy*. This means that the ruler is a *despot*, or a monarch, having complete power to do what he chooses. For instance, he may put men to death without any trial, a right that the laws of our country do not allow.

In many countries that have kings, however, the people have much power. For example, there is a king in England, but the English people are quite as free as we are.

In studying a lesson it is not best to spend all of your time with your book in hand. After carefully reading the text through two or three times, you might select some topic that you think would prove interesting to your mother, or to some of your friends, or that they could tell you more about. Then, during the meal hour, or at some other time when others present



FIG. 99.—The Washington Monument, erected in Washington in memory of our first President.

have nothing special to talk about, bring up this topic. Tell what you have read, and ask the others some questions about it.

Talking over a part of a lesson in such a way is one of the very best ways of studying it, and it is also one of the best ways of pleasing your parents.

Review Questions

1. What do you understand by *voting*, and by *elections*?
2. What kind of questions do elections decide?
3. Give examples of local questions, or questions that are voted upon by small groups of people.
4. Give examples of questions that concern the people of a whole state.
5. How are laws made for a whole state, and who are some of the officers elected for the state?
6. How are laws made for large cities, and who are some of the officers elected for

cities?

7. Give examples of questions that concern the people of the United States.
8. How are laws made, and who are some of the officers chosen for the United States?
9. Why is our government called a democracy? Why a republic?
10. Tell about other forms of government.

1. Name some officers that you know about, and find out whether they represent the local, state, or national government.
2. What officers look after your school, and how are they chosen?
3. What is the capital of your state, and where is it?
4. In what respect are the town hall, city hall, state capitol building, and United States capitol alike in their use?
5. Why should the capital of a state be near the center of the state, if possible?
6. What does U. S. stand for?

SECTION IV. MAPS

IT is often important to represent a country upon a map, so as to tell at a glance what its shape is, and where its mountains, rivers, and cities are. Such a drawing can be made of any place, no matter how large or small it may be.

Suppose, for instance, we desire to make a map, or drawing, of a schoolroom (Fig. 100). The room we have chosen is thirty-two feet long and thirty-two feet wide. It would not be easy to find a piece of paper so large as that; but it is not necessary to have so large a piece in order to make the drawing. A small piece will do just as well, if we let one inch on the paper stand for several feet in the room.

In this case let one inch stand for sixteen feet. Since the room is thirty-two feet on each side, the drawing will be just two inches long and two inches wide. To place the desks

and aisles properly, we shall need to use a ruler with the inches divided into sixteenths; for one foot in the room represents one sixteenth of an inch on the ruler.

The ends of the room are on the north and south, and the sides on the east and west.



FIG. 100.—Photograph of a schoolroom.

The teacher's desk is three and one half feet in front of the north wall. There is a row of desks about four feet from the west wall. The desks are just two feet long, with eight in a row one and one fourth feet apart. There are seven rows, and the aisles between them are each one and one fourth feet wide. The piano is on the west side of the teacher's desk.

Here is a map of the schoolroom (Fig. 101). Measure each part to see whether it has been drawn correctly, using a foot rule that shows the sixteenths of inches. How large is the teacher's desk? The piano?

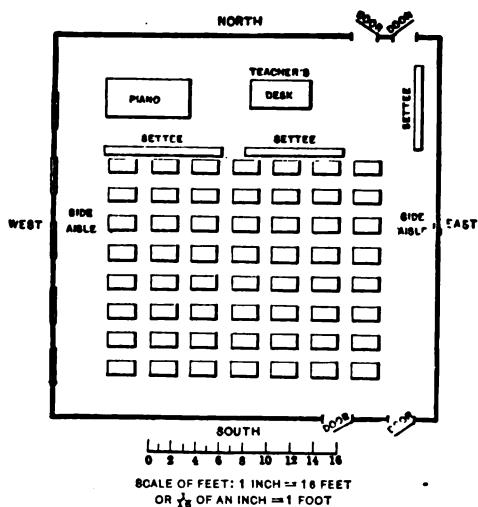


FIG. 101.—Map of a schoolroom.

When a person draws in this way, letting a certain distance on the paper stand for a greater distance, according to a scale, he is said to use a *scale*, or to make a map *according to a scale*. In the schoolroom just described (Fig. 101) the scale is one inch to sixteen feet.

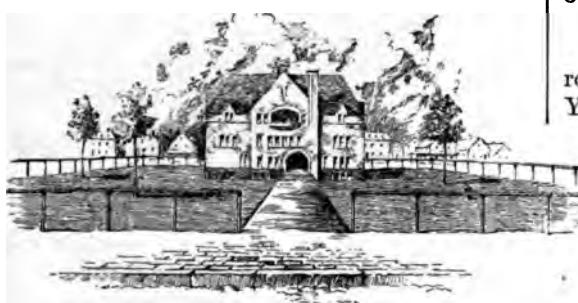


FIG. 102.—Picture of the schoolhouse and yard represented in the map (Fig. 103).

In the next drawing, that of the school yard (Fig. 102), the number of feet which an inch

represents must be still greater, because the yard is much larger than the room. Here one inch represents one hundred and forty feet. According to that scale, find out how large the yard and the school building are

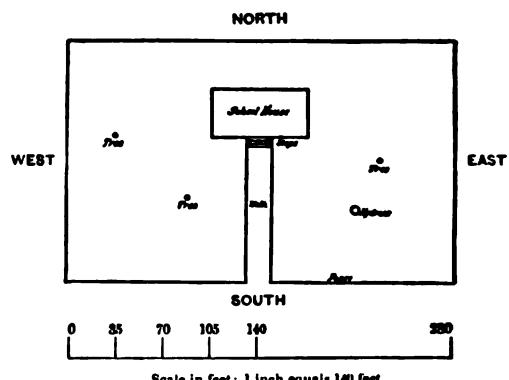


FIG. 103.—Map of a school yard.

(Fig. 103). Find how far the trees are from each other; from the nearest fence; from the building.

All maps are drawn according to a scale, just as these two are. It makes no difference whether they represent a school yard, a state, the United States, or even the entire earth; all are drawn to a scale. In Part II of this book there is a map of North America (Fig. 133); to what scale is it drawn? Look at some other maps to find out their scales.

Can you not make a map of your own schoolroom? What scale will you use? Maps that you might put in your own desk, might draw but omit the others. You might also draw a map of your school yard. If you prefer to do so, find its size by stepping, or *pacing*, off the distance, making each of your steps about two feet long. Measure the building in the same way. After having finished these two maps, you might draw a third one, including in it not only the school yard, but also a few of the streets and houses near by. The scale for this third map might perhaps be one inch for every five hundred steps.

Maps are used a great deal to show the location of places and the direction of one place from another.

Ways of finding directions out of doors To use them properly, a person must first understand what is meant by north, south, east, and west. Probably you already know that. One of the easiest ways to find the direction is by a compass (Fig. 104).

A compass is a piece of steel, called a needle, which easily swings around, and always points to the north. This needle is a magnet, like the

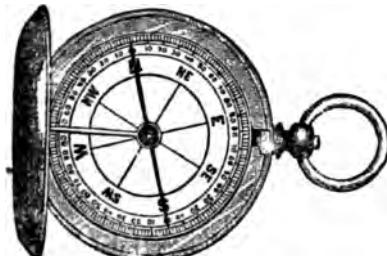


FIG. 104.—A small compass.

horseshoe magnets that you have seen. It points northward because some force within the earth draws it in that direction. No one knows certainly just what this force is, but it is called *magnetism*.

Another way to tell direction is by the stars. When the stars are shining, one can tell which direction is north by the help of the Great Dipper. The two stars on the edge of the Dipper point toward the North Star. This star can be easily found, and it always lies to the north of us.

One can also find direction by the help of the sun. At noon it stands exactly south of us; and twice each year, about the 21st of March and the 21st of September, it rises exactly in the east, and sets exactly in the west. Where does it rise in winter? In summer? When you face the east, which direction is on your right? Which on your left? Answer the same questions when facing the west; the south.

Northeast (N.E.) means halfway between north and east; southeast (S.E.) halfway between south and east. What, then, do northwest and southwest mean?

Point north, east, west, south, southwest, northeast, northwest. Walk a few feet in each

of these directions. What is the direction from your desk to the teacher's desk? To the desk of one of your schoolmates? To the door? What direction is your home from the school-house? From certain other houses? In what directions do some of the streets extend?

Now let us tell directions on the map. Lay your drawing of the schoolroom upon your desk so that the line representing the north side of the room is on the north side. Also place yourself so that you face directly north as you look at the map. Now north on the map is also north in the room, and the other directions correspond with those in the room. In which direction, on the map, is the door from your desk? From the teacher's desk? Place your map of the school yard in the same position, and give the directions.

You see that the north side of this map is the side farthest from you. The east side is on your right, the south side is nearest to you, and the west side is on your left. When a map is lying before us, the directions on it are usually the same as these.

Of course it is not always convenient to have a map lying flat. This is especially true in the schoolroom, where the large maps must be hung up, so that the whole class may see them.

Let us hang up one of these maps, taking particular pains to place it upon the *north wall*. Which direction on the map is north now? You see, of course, that the north side must be the upper side, east is on the *right*, south is the lower side, and west is on the *left*.

You should drill yourself to understand directions on maps. Give directions from one place to another while



FIG. 105.—To illustrate the meaning of a map. The left-hand figures show the country as if you were looking down upon it; the right-hand figures represent the same country by maps. Tell what you see in each of these.

the map is hanging up. Put up the map of the school yard, and any others that you may have, and tell the directions from place to place.¹

It is clear now what a map is. It is a drawing telling something about a country, just as a letter may be some writing telling what a place is like.

¹ After the children are quite at home in using the map when it is hung on the north wall, hang it on the other sides of the room and have them give the directions. This is very easy work if properly graded; but careless work at this point, in regard to directions on the map, often so confuses children that they never fully recover from their confusion. At the proper time, but much later than this, show that toward the top of the map is not always north. See Figure 272.

When you read such a letter, you think of the place and have some idea of how it looks. So, when you look at a map, you should think about the country, how it looks, and how far apart the places are.

There is more than one kind of map. Figure 133 (in Part II), for example, is a map of North America. This shows the shape of the continent, the position of the mountains, the large rivers, and the principal cities. It does not show the height of the mountains, nor of the hills and valleys, but represents the whole continent as entirely flat. Such a map may be called a *flat map*.

Figure 111, however, is a different kind of map. It shows how the continent might appear if

you looked down upon it from some point far above. On this map the plains appear level, as they should, while the mountains stand out in relief. You can easily see where the mountains, plains, and valleys are. Such a map as this is called a *relief map*, because it gives you some idea of the height of different portions of the land, or of the *relief*.¹ In

¹ Some teachers will find it useful to introduce the study of contour maps of the home region at this point. Such a study is not difficult, and will serve many useful purposes. A limited amount of modeling in sand may also be introduced; but the most important thing to do at this stage is to have the children understand the *meaning* of maps, so that these may be properly used in the class work. The best results from geography study cannot be gained without a knowledge and constant use of maps; and much use of the globe should be made, the moment children begin the study of continents and countries.

Figure 105 you can easily see the difference between these two kinds of maps. There are other kinds of maps, which you will learn about later.

1. How can a map of a schoolroom be drawn?
2. What is meant by drawing "according to a scale"? 3. Tell how you have drawn some map of your own. Review Questions
4. What are some of the ways of finding directions out of doors? 5. What are the directions on a map? 6. What two kinds of maps do you know?

1. Examine a compass. 2. Find the Great Dipper and the North Star. 3. Show how you can tell the north direction by your shadow at 12 o'clock, noon. Suggestions
- The east direction. The west. 4. Using sand, make a relief map of some piece of land that has some slopes.

PART II. WORLD GEOGRAPHY

I. GENERAL FACTS ABOUT THE EARTH

i. Form and Size of the Earth

Hundreds of years ago, before America was discovered, men thought that the

The form of earth was flat. It certainly seemed flat to them, just as it does to us. A few learned men, however, believed the earth to be a round ball, and that, if a person should travel straight on in one direction, he would, in time, return to the place from which he started. You can see how this would be if you push your finger straight around on the outside of an orange, until it comes back to the starting point.

At that time men were in the habit of going to a land called India, for spices, silks, and jewels. To reach India from Spain they traveled thousands of miles *eastward*. Christopher Columbus (Fig. 108) was one of the men who believed that the earth was round. So he thought he could reach India just as well by going *westward* across the ocean. He also thought that the distance would be much less. He therefore went to the king of Spain and asked him for ships and men to make the journey.

The king refused the request because the plan seemed foolish, but Queen

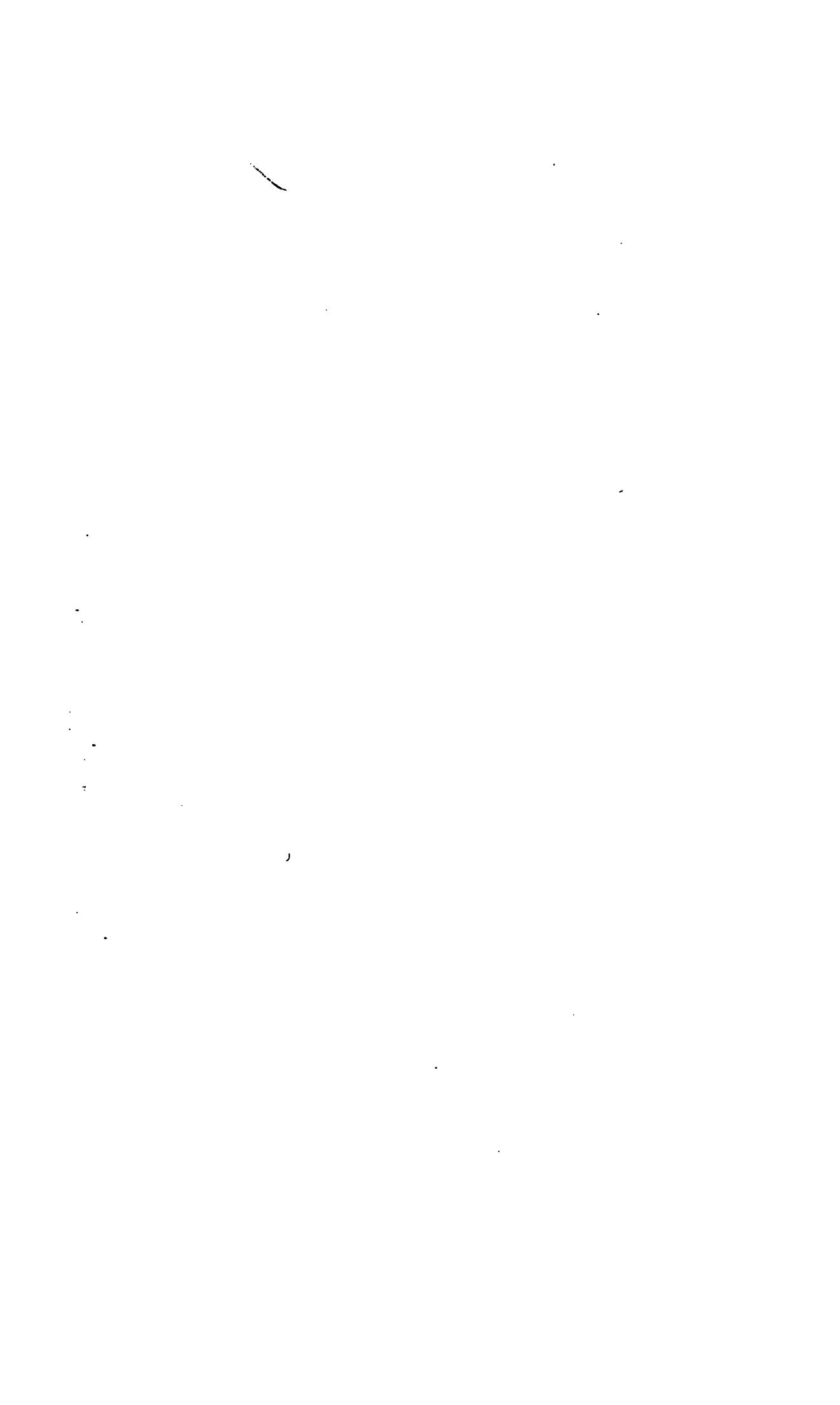
Isabella came to Columbus's aid. At last, on Aug. 3, 1492, he sailed westward from Spain out into the open Atlantic Ocean (Fig. 109). Almost every one thought that he was going on a voyage from which he would never

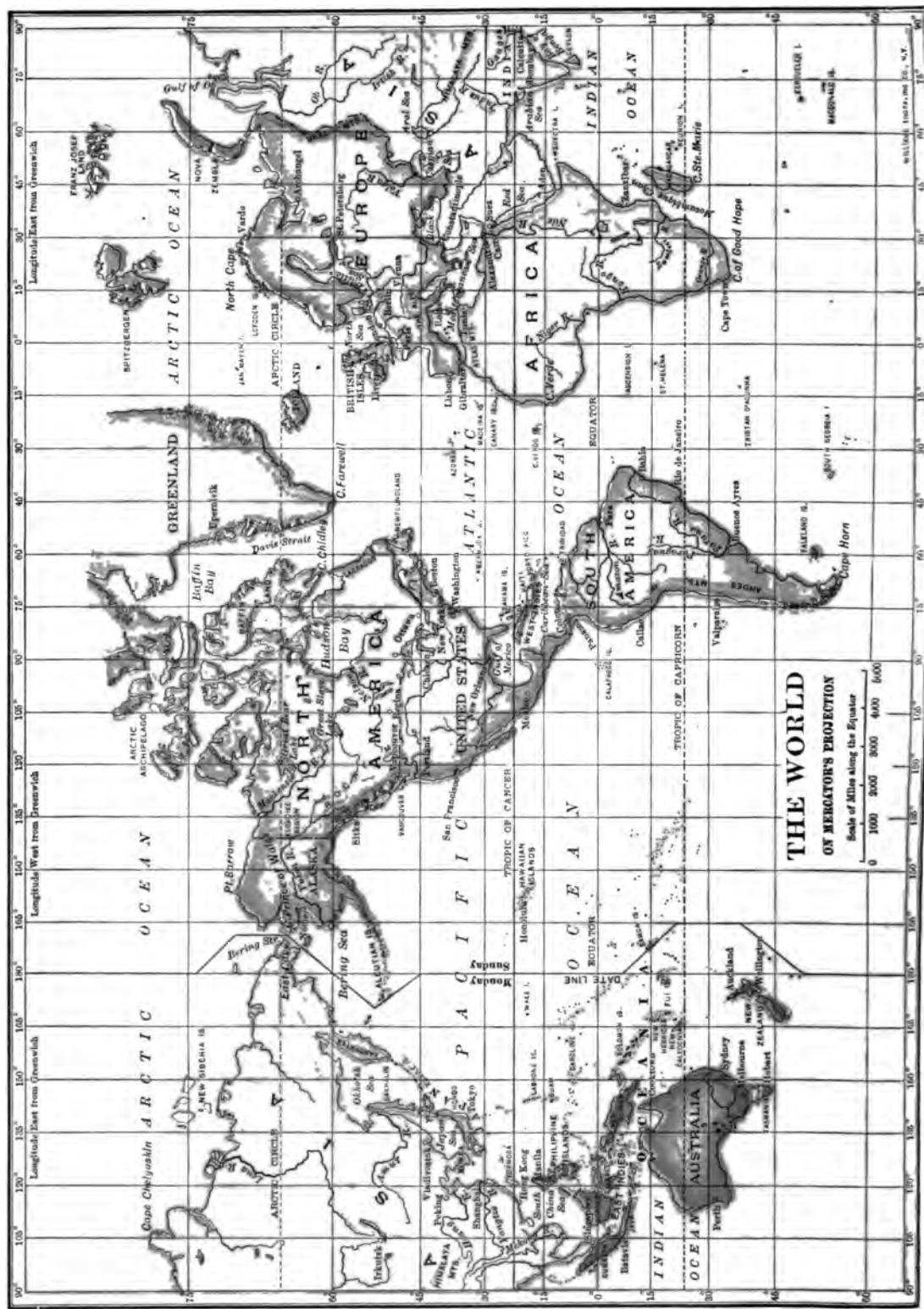


FIG. 108.—Christopher Columbus.

return; but after a journey of several weeks, and many adventures, he discovered land on October 12 (Fig. 110).

Thinking he had reached India, Columbus called the natives Indians; but, instead of India, he had discovered some





Kilts. 103.



FIG. 107.
The Eastern and Western Hemispheres.



islands in the West Indies, on the coast of our own continent of North America.



FIG. 109.—A copy of the *Santa Maria*, one of the ships that Columbus had on his first voyage to America.

He did not know that a continent and a large ocean still lay between him and India.

After Columbus had returned in safety, other men dared to explore the *New World*, as it was called, to distinguish it from the *Old World*, where all white men then lived. One of these explorers, named Magellan, started to sail entirely around the earth. He was killed when

he reached the Philippine Islands, but his men went on with the ships and

completed the voyage. This was in the year 1520, and it was the first time that any one ever sailed entirely around the earth. Since then many people have made the journey, in various directions, and the earth has been studied so carefully that every one now knows that it is round.

The great round earth is a huge ball, or *sphere*, called the *globe*. The reason why it does not appear round ^{Why the earth} to you is that you see so little ^{does not seem} of it at a time. If you see ^{round} very little of an orange, for example, it will not look round. To prove this, place a piece of paper with a small hole in it, upon an orange, so that none of the surface of the orange is seen, excepting that which shows through the hole. You will then observe that this part of the orange appears to be flat, not round.

If we could get far enough away from the earth to see a large part of it at once, we could easily observe that it is



FIG. 110.—Columbus taking possession of the newly discovered land in America.

round (Fig. 111). We know that the moon is round, because we look at it

from a great distance; and the earth has the same shape as the moon.



FIG. 111.—A map of half the earth as it might appear if seen from a great distance above it.

Our globe is very large; in fact, it is much larger than the moon. A lofty mountain seems to us very high, but even the highest mountains are only a very small part of

The size of the earth the great earth; when compared to the whole earth, they are no larger than a speck of dust compared to an apple. The loftiest mountains are rarely more than three or four miles high, but the *diameter* of the earth (Fig. 112), or the distance from one side to the other, through the center, is nearly *eight thousand miles*.

FIG. 112.—Figure of the earth cut in two, to show the *diameter*—a line passing through the center of the earth.

The distance around the earth, on the outside, called the *circumference*, is about twenty-five thousand miles. This distance, as you see, is a little more than three times the diameter. The circumference of any sphere is always a little more than three times its diameter. How can you prove this with an orange?

2. Daily Motion of the Earth

It does not seem to us that the earth is moving, but the ground on which you stand is really moving faster *The daily motion of the earth* than any passenger train that you ever saw. The whole earth is whirling around like a top, at a tremendous rate. This motion is called its *rotation*. Since the earth turns completely around, or makes one complete rotation, every twenty-four hours, this motion is called its *daily rotation*.



FIG. 113.—The light from the candle lights only half of the apple that the boy is holding, just as the sun lights only half of the earth.

It is this daily rotation that causes day and night. A lamp can light only one half of a ball at a time, *How rotation causes day and night* as you know (Fig. 113). The sun is a kind of lamp for the earth ball, for all the light of our

day comes from the sun. The sun, then, can light only one half of the great earth at a time.

This being the case, if our globe stood perfectly still, it would always be day on the side facing the sun, and night on the other side.

Since the earth rotates, the part that is getting the light is always changing. Thus, while the sun is always setting for some people, it is always rising for others. When it is noon where you live, it is midnight at the point opposite you, on the other side of the earth.

This is why there is a period of daylight, and a period of darkness, at the place where you live. These two periods together must last twenty-four hours, because the earth makes one complete rotation in that time.

The daily rotation also causes sunrise and sunset. Our earth *seems* to be standing still, while each day the sun *seems* to rise in the east, to pass over us, and to set in the west. Yet we have just seen that the earth is not standing still by any means. Neither does the sun really "rise" and "set." The reason that the sun *seems* to rise in the east is that the earth is always rotating toward the east. We first get the light of the sun from that direction because the earth is turning in that direction. The sun seems to set in the west because, as the earth continues to rotate, we see the sun last in the west.

Although men speak of the sun "rising" in the east and "setting" in the west, they really know better. They express their thoughts in that way, simply because it is the easiest way. It would be difficult to think of any better way. Can you? Hundreds of years ago, however, all people thought that the sun really rose, and

that after moving across the heavens, it really set in the west. Our use of the words *sunrise* and *sunset* has come down to us from that time.

Since the earth is rotating with so great speed, why can we not notice it? The answer is simple. Everything on the earth is moving with it, including ourselves. On that account there are no objects near by for us to rush past; yet the only way of seeing that we are moving, would be to observe that we were passing the objects about us.

Why are we not all hurled away from the earth? When the string breaks by which a stone is being *why* rotation whirled around, the stone *does not* hurl flies off. Why, then, do not *us away* we, and other objects, such as the water in the ocean, fly away into space?

The reason is that *the earth draws everything toward it*, and holds it there. If you push a book from your desk, it falls to the floor; and when you spring upward into the air you quickly return to the ground. All objects are drawn downward because the earth is pulling upon them. It attracts them much as a horseshoe magnet attracts a piece of iron. This force, which draws all objects to the earth, is called *gravity*, and you see how very important it is.

You have perhaps watched a wheel spin about on a rod or pin, the rod or pin holding it in place and *meaning of carrying its weight*. The *axis and poles of the earth* earth spins around in much the same way; but no rod is necessary to hold it in place. What a mighty rod it would have to be, if there were one! A spinning top does not turn around a rod, either. It turns around a line running through its center, which is called its *axis* (Fig. 114). The earth also *rotates around*, or as we say, *on its axis*.

The axis of the earth is really nothing that you can see. It can be represented, however, by a straight line that runs through the center of the earth, and extends to the surface in both directions. Such a line is called the *axis of the earth*



FIG. 114.—A drawing of the earth, cut in two, to show the position of the axis extending from pole to pole through the center of the earth.

(Fig. 114), and the two ends of the line are called the *poles of the earth*. One end of the axis is the *north pole*, and the other, the *south pole*.

You can understand this better by running a long, slender stick, or needle, through the center of an apple. The stick represents the axis, and the places where its two ends appear at the surface, represent the two poles of the earth. You can then spin the apple very much as the earth spins around on the line called its axis (Fig. 114).

If you were to go directly north from the place where you live, you would pass through the land of the Eskimos; and if you could go on, you would, in time, come to the north pole. Or, if you should travel due south, and went far enough, you would come to the south pole.

Many men have tried to cross the icy seas that surround the north pole; but, until 1909,

no one had been able to get quite so far as the pole. In that year Commander Peary, after many trials, at last reached the north pole; and Captain Amundsen discovered the south pole in 1911. Of course, Commander Peary did not find anything at the pole to mark the place. He was able to tell that he was there by the position of the sun. Had he been there during the night he would have found the *north star*, towards which the earth's axis points, almost directly over his head.

Midway between the poles we think of another line, drawn around the earth on the outside (Fig. 115). Meaning of equator This is called the *equator*, because all parts of it are equally distant from each of the poles. The distance

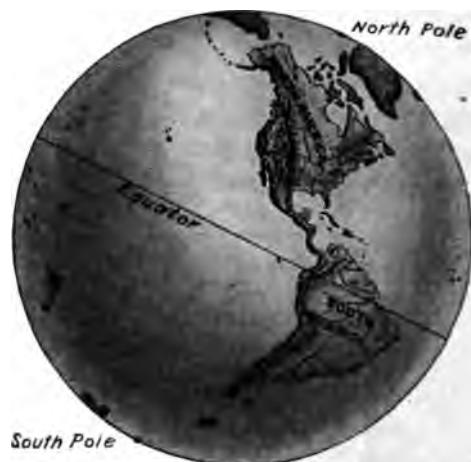


FIG. 115.—A drawing of that half of the sphere that includes the New World,—to show the position of the poles and the equator.

around the earth was given on page 88. What, then, is the length of the equator?

As the earth spins on its axis, all points on the surface must go with it, just as every part of the skin of an apple turns with the apple. Since the earth makes one complete turn each day, a man at the equator travels twenty-five thousand miles in twenty-four hours. What a whirling motion that is! It is at the rate of over one thousand miles an hour, while the fastest trains travel little more than sixty miles an hour!

3. The Zones

The hottest part of the earth is near the equator. The reason for this is that the sun, at midday, is directly over the heads of the people who live in that region.

The zones and their boundaries

1. The torrid zone

You know that the sun's rays feel warmer at noon than in the early evening, because the sun is more

it is about fifteen hundred miles north of the equator. The southern boundary, which is likewise fifteen hundred miles from the equator, is called the *Tropic of Capricorn*. In all the vast space between these two lines, or *tropics*, the sun is straight overhead during a part of the year; and it is never, on any day, very far from that.

Point out these two tropics on Figure 116. How wide is this belt? Over all this vast region the heat is intense, or *torrid*, and for that reason this is called the *torrid zone*. It is also called the *tropical zone*, or the *tropical belt*, because it is bounded by the two tropics.

People who live within the torrid zone wear only the very lightest clothing. We have seen that this is true of the Negroes of Central Africa, whose homes lie within this belt. Point out Central Africa on Fig. 107. Does any part of North America lie within the torrid zone? Walk toward that zone.

North of the torrid zone, the sun, even at noon, *never* stands directly overhead; and the greater the distance from the equator, the greater is the slant at which the sun's rays shine upon the earth. Exactly the same is true as one goes south of the torrid zone.

2. The two temperate zones

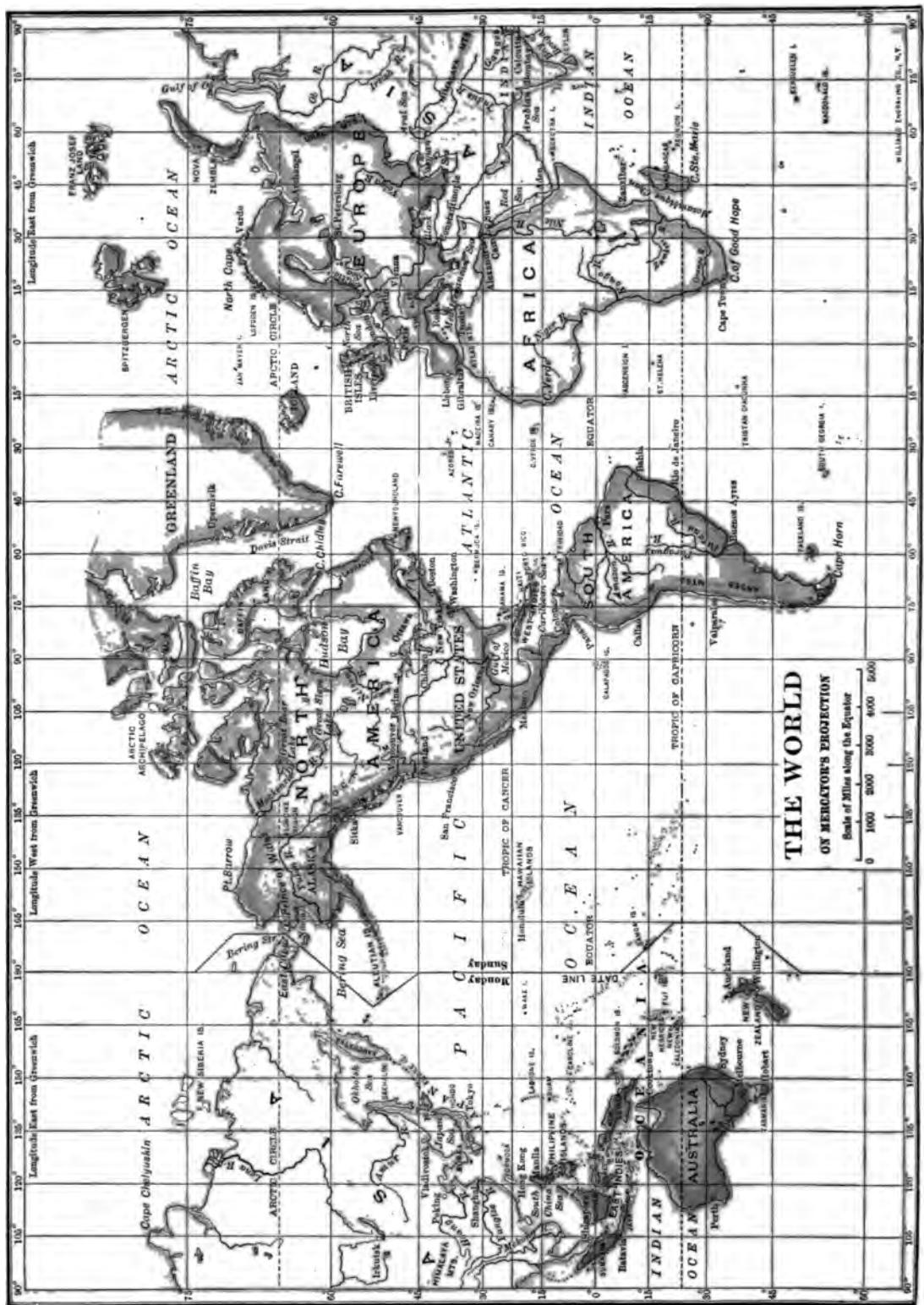
There is a belt, then, on each side of the broad torrid zone, where it is neither very hot nor very cold. The climate there is called *temperate*, and in these belts the summers are warm and the winters cold. The belt north of the torrid zone is called the *north temperate zone*. It extends all the way from the Tropic of Cancer to the Arctic Circle (Fig. 116). How much of the United States lies within this zone?



FIG. 116.—A map of the zones. The colors suggest sharp differences between the zones on the two sides of the boundaries; but you should remember that the changes are really very gradual.

nearly overhead at noon. For much the same reason the sun seems warmer in summer than in winter, because in summer it rises higher in the heavens. At the equator, however, and for many miles to the north and south of it, the sun is high in the heavens both in summer and winter. Thus there is a wide belt, extending all the way around the earth, that never has any winter; it is hot there every day in the year, as it is in summer where we live.

The northern boundary of this hot belt is called the *Tropic of Cancer* (Fig. 116);



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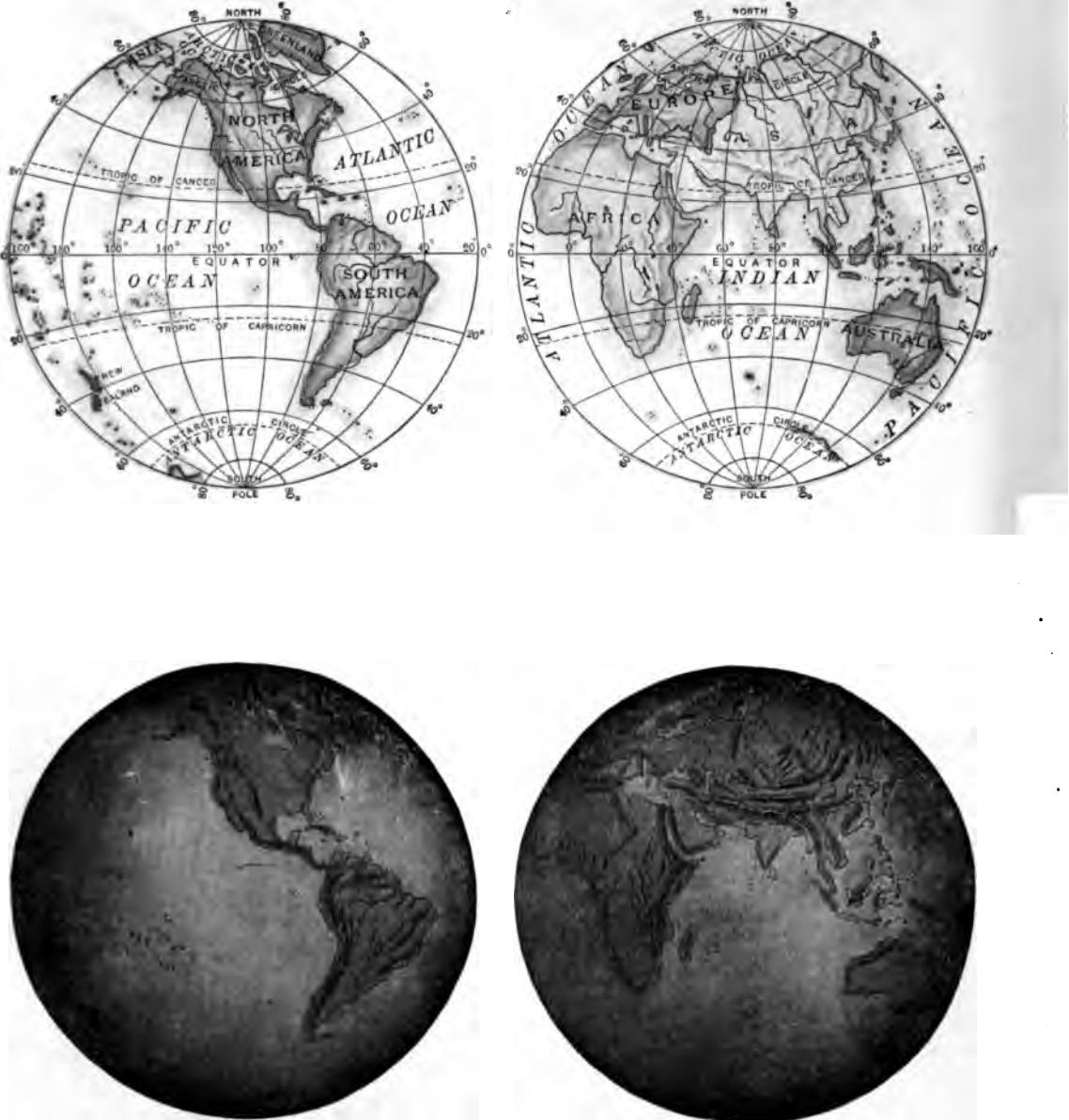
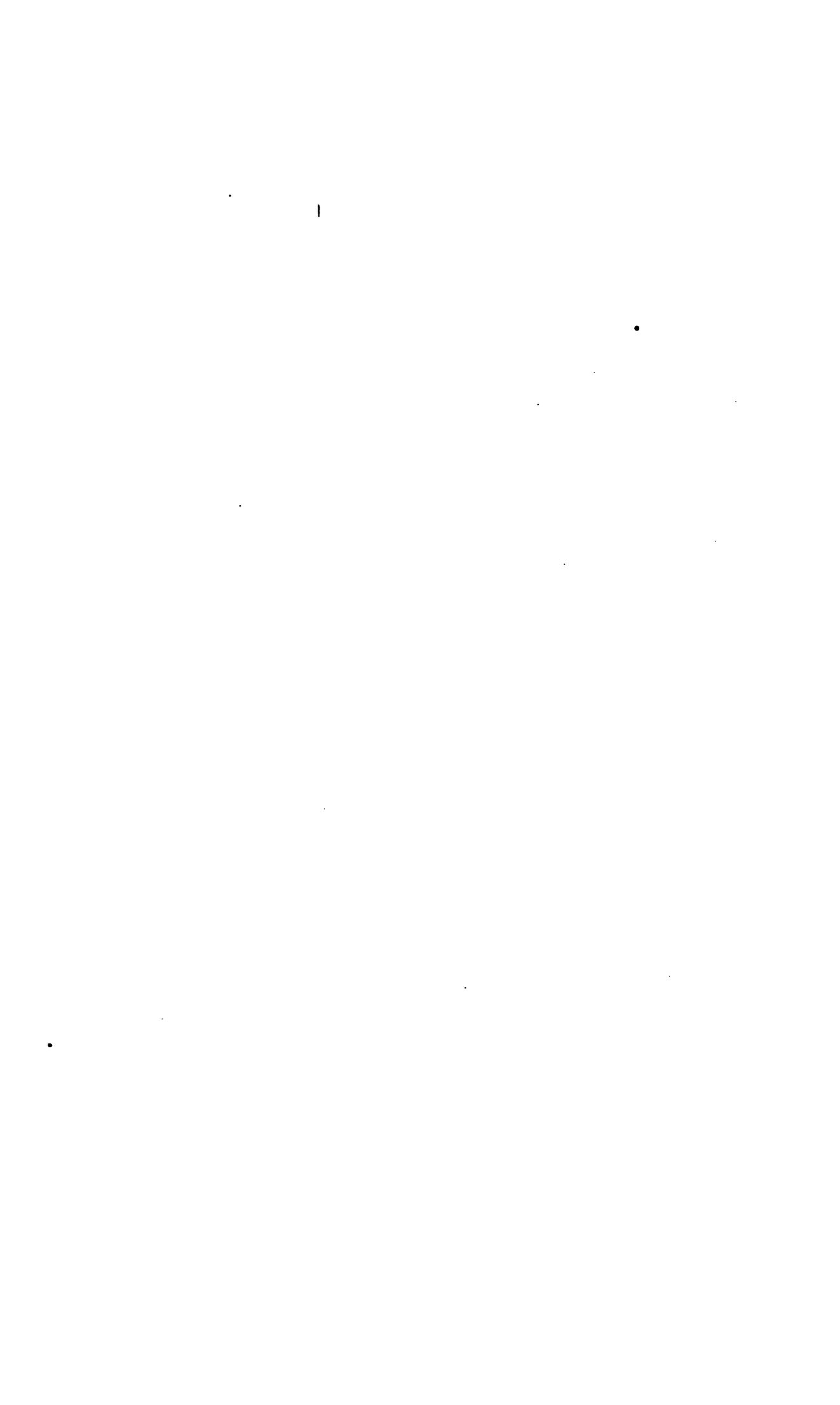


FIG. 107.
The Eastern and Western Hemispheres.



islands in the West Indies, on the coast of our own continent of North America.



FIG. 109.—A copy of the *Santa Maria*, one of the ships that Columbus had on his first voyage to America.

He did not know that a continent and a large ocean still lay between him and India.

After Columbus had returned in safety, other men dared to explore the *New World*, as it was called, to distinguish it from the *Old World*, where all white men then lived. One of these explorers, named Magellan, started to sail entirely around the earth. He was killed when he reached the Philippine Islands, but his men went on with the ships and

completed the voyage. This was in the year 1520, and it was the first time that any one ever sailed entirely around the earth. Since then many people have made the journey, in various directions, and the earth has been studied so carefully that every one now knows that it is round.

The great round earth is a huge ball, or *sphere*, called the *globe*. The reason why it does not appear round to you is that you see so little ^{why the earth} ~~does not seem~~ of it at a time. If you see very little of an orange, for example, it will not look round. To prove this, place a piece of paper with a small hole in it, upon an orange, so that none of the surface of the orange is seen, excepting that which shows through the hole. You will then observe that this part of the orange appears to be flat, not round.

If we could get far enough away from the earth to see a large part of it at once, we could easily observe that it is



FIG. 110.—Columbus taking possession of the newly discovered land in America.

round (Fig. 111). We know that the moon is round, because we look at it

from a great distance; and the earth has the same shape as the moon.



FIG. 111.—A map of half the earth as it might appear if seen from a great distance above it.

Our globe is very large; in fact, it is much larger than the moon. A lofty mountain seems to us very high, but even the highest mountains are only a very small part of the great earth; when compared to the whole earth, they are no larger than a speck of dust compared to an apple. The loftiest mountains are rarely more than three or four miles high, but the *diameter* of the earth (Fig. 112), or the distance from one side to the other, through the center, is nearly *eight thousand miles*.

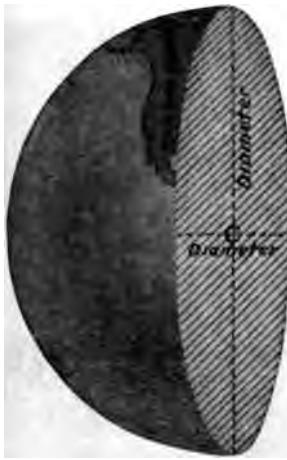


FIG. 112.—Figure of the earth cut in two, to show the *diameter*—a line passing through the center of the earth.

The distance around the earth, on the outside, called the *circumference*, is about twenty-five thousand miles. This distance, as you see, is a little more than three times the diameter. The circumference of any sphere is always a little more than three times its diameter. How can you prove this with an orange?

2. Daily Motion of the Earth

It does not seem to us that the earth is moving, but the ground on which you stand is really moving faster *The daily motion of the earth* than any passenger train that you ever saw. The whole earth is whirling around like a top, at a tremendous rate. This motion is called its *rotation*. Since the earth turns completely around, or makes one complete rotation, every twenty-four hours, this motion is called its *daily rotation*.



FIG. 113.—The light from the candle lights only half of the apple that the boy is holding, just as the sun lights only half of the earth.

It is this daily rotation that causes day and night. A lamp can light only one half of a ball at a time, *How rotation causes day and night* as you know (Fig. 113). The sun is a kind of lamp for the earth ball, for all the light of our

day comes from the sun. The sun, then, can light only one half of the great earth at a time.

This being the case, if our globe stood perfectly still, it would always be day on the side facing the sun, and night on the other side.

Since the earth rotates, the part that is getting the light is always changing. Thus, while the sun is always setting for some people, it is always rising for others. When it is noon where you live, it is midnight at the point opposite you, on the other side of the earth.

This is why there is a period of daylight, and a period of darkness, at the place where you live. These two periods together must last twenty-four hours, because the earth makes one complete rotation in that time.

The daily rotation also causes sunrise and sunset. Our earth *seems* to be standing still, while each day the sun *seems* to rise in the east, to pass over us, and to set in the west. Yet we have just seen that the earth is not standing still by any means. Neither does the sun really "rise" and "set." The reason that the sun *seems* to rise in the east is that the earth is always rotating toward the east. We first get the light of the sun from that direction because the earth is turning in that direction. The sun seems to set in the west because, as the earth continues to rotate, we see the sun last in the west.

Although men speak of the sun "rising" in the east and "setting" in the west, they really know better. They express their thoughts in that way, simply because it is the easiest way. It would be difficult to think of any better way. Can you? Hundreds of years ago, however, all people thought that the sun really rose, and

that after moving across the heavens, it really set in the west. Our use of the words *sunrise* and *sunset* has come down to us from that time.

Since the earth is rotating with so great speed, why can we not notice it? The answer is simple. Everything on the earth is moving with it, including ourselves. On that account there are no objects near by for us to rush past; yet the only way of seeing that we are moving, would be to observe that we were passing the objects about us.

Why are we not all hurled away from the earth? When the string breaks by which a stone is being whirled around, the stone does not ^{Why rotation} hurl flies off. Why, then, do not ^{us away} we, and other objects, such as the water in the ocean, fly away into space?

The reason is that the earth *draws everything toward it*, and holds it there. If you push a book from your desk, it falls to the floor; and when you spring upward into the air you quickly return to the ground. All objects are drawn downward because the earth is pulling upon them. It attracts them much as a horseshoe magnet attracts a piece of iron. This force, which draws all objects to the earth, is called *gravity*, and you see how very important it is.

You have perhaps watched a wheel spin about on a rod or pin, the rod or pin holding it in place and carrying its weight. The ^{Meaning of} *axis and poles* of the earth spins around in much the same way; but no rod is necessary to hold it in place. What a mighty rod it would have to be, if there were one! A spinning top does not turn around a rod, either. It turns around a line running through its center, which is called its *axis* (Fig. 114). The earth also *rotates around*, or as we say, *on its axis*.

The axis of the earth is really nothing that you can see. It can be represented, however, by a straight line that runs through the center of the earth, and extends to the surface in both directions. Such a line is called the *axis of the earth*



FIG. 114.—A drawing of the earth, cut in two, to show the position of the axis extending from pole to pole through the center of the earth.

(Fig. 114), and the two ends of the line are called the *poles of the earth*. One end of the axis is the *north pole*, and the other, the *south pole*.

You can understand this better by running a long, slender stick, or needle, through the center of an apple. The stick represents the axis, and the places where its two ends appear at the surface, represent the two poles of the earth. You can then spin the apple very much as the earth spins around on the line called its axis (Fig. 114).

If you were to go directly north from the place where you live, you would pass through the land of the Eskimos; and if you could go on, you would, in time, come to the north pole. Or, if you should travel due south, and went far enough, you would come to the south pole.

Many men have tried to cross the icy seas that surround the north pole; but, until 1909,

no one had been able to get quite so far as the pole. In that year Commander Peary, after many trials, at last reached the north pole; and Captain Amundsen discovered the south pole in 1911. Of course, Commander Peary did not find anything at the pole to mark the place. He was able to tell that he was there by the position of the sun. Had he been there during the night he would have found the *north star*, towards which the earth's axis points, almost directly over his head.

Midway between the poles we think of another line, drawn around the earth on the outside (Fig. 115). Meaning of This is called the *equator*, equator because all parts of it are equally distant from each of the poles. The distance



FIG. 115.—A drawing of that half of the sphere that includes the New World,—to show the position of the poles and the equator.

around the earth was given on page 88. What, then, is the length of the equator?

As the earth spins on its axis, all points on the surface must go with it, just as every part of the skin of an apple turns with the apple. Since the earth makes one complete turn each day, a man at the equator travels twenty-five thousand miles in twenty-four hours. What a whirling motion that is! It is at the rate of over one thousand miles an hour, while the fastest trains travel little more than sixty miles an hour!

3. The Zones

The hottest part of the earth is near the equator. The reason for this is that the sun, at midday, is directly over the heads of the people who live in that region.

The zones and their boundaries

1. The torrid zone

You know that the sun's rays feel warmer at noon than in the early evening, because the sun is more

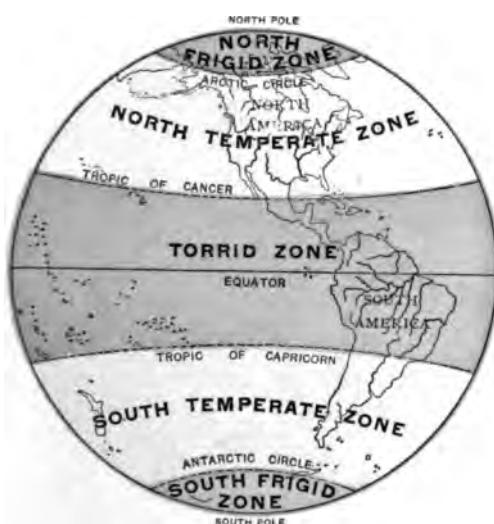


FIG. 116. — A map of the zones. The colors suggest sharp differences between the zones on the two sides of the boundaries; but you should remember that the changes are really very gradual.

nearly overhead at noon. For much the same reason the sun seems warmer in summer than in winter, because in summer it rises higher in the heavens. At the equator, however, and for many miles to the north and south of it, the sun is high in the heavens both in summer and winter. Thus there is a wide belt, extending all the way around the earth, that never has any winter; it is hot there every day in the year, as it is in summer where we live.

The northern boundary of this hot belt is called the *Tropic of Cancer* (Fig. 116);

it is about fifteen hundred miles north of the equator. The southern boundary, which is likewise fifteen hundred miles from the equator, is called the *Tropic of Capricorn*. In all the vast space between these two lines, or *tropics*, the sun is straight overhead during a part of the year; and it is never, on any day, very far from that.

Point out these two tropics on Figure 116. How wide is this belt? Over all this vast region the heat is intense, or *torrid*, and for that reason this is called the *torrid zone*. It is also called the *tropical zone*, or the *tropical belt*, because it is bounded by the two tropics.

People who live within the torrid zone wear only the very lightest clothing. We have seen that this is true of the Negroes of Central Africa, whose homes lie within this belt. Point out Central Africa on Fig. 107. Does any part of North America lie within the torrid zone? Walk toward that zone.

North of the torrid zone, the sun, even at noon, *never* stands directly overhead; and the greater the distance from the equator, the greater is the slant at which the sun's rays shine upon the earth. Exactly the same is true as one goes south of the torrid zone.

There is a belt, then, on each side of the broad torrid zone, where it is neither very hot nor very cold. The climate there is called *temperate*, and in these belts the summers are warm and the winters cold. The belt north of the torrid zone is called the *north temperate zone*. It extends all the way from the Tropic of Cancer to the Arctic Circle (Fig. 116). How much of the United States lies within this zone?

2. The two temperate zones

Here, at noon, even in summer, you find your shadow pointing north, for the sun is south of you. Notice the direction and length of your shadow at midday, and the position of the sun at that time. Do you know whether your shadow is longer in summer than in winter, or shorter? Which must it be, since the sun stands higher in the heavens in summer than in winter?

The belt south of the torrid zone is called the *south temperate zone*, as you might expect. It extends from the Tropic of Capricorn to the Antarctic Circle. People living there find their shadows at noon always pointing south, since the sun is north of them. Their seasons, also, are just the opposite of ours; when we have summer, they have winter; and when we have winter, they have summer.

Near the poles the rays of the sun reach the earth at a still greater slant, much as they do with us early in the morning, or late in the afternoon. Even in the middle of the day the sun lies low in the sky, near the horizon, and the shadows are very long. Therefore, the climate there is very cold, or *frigid*; the ground never thaws out; and the ice never entirely disappears from the sea (Fig. 117). Indeed, there is never any warm summer near the poles, just as there is never any winter near the equator.

The two regions around the poles are called the *frigid zones*. That about the north pole is called the *north frigid zone*, and the other the *south frigid zone*. Since they surround the poles, they are

also sometimes called the *polar zones*. The north frigid zone is the home of the Eskimos, but there are no people living in the south frigid zone.

Since the equator is midway between the poles, it divides the earth, or sphere, into two equal parts, called *hemispheres* (*hemi*=half). The half of the ^{The hemi-}_{spheres} earth north of the equator is called the *northern hemisphere*, and that south of it the *southern hemisphere*. In which of these hemispheres is the United States?



FIG. 117. — A ship in the ice that covers the sea in the cold, or *frigid zone*.

The earth may also be divided into halves by a circle running north and south through both poles. The western half, in which the New World lies, is called the *western hemisphere*. The eastern half, containing the Old World, is called the *eastern hemisphere*. You will find these two hemispheres represented in Figure 107. In which of them is your home?

4. Latitude and Longitude

If we learn that a certain place is in the torrid zone, or in one of the other zones, we know something ^{How places} about its location; yet we do ^{are located on} not know very much about ^{the earth} it, because each zone is so wide and long.

To help locate places more exactly, other circles than those already mentioned are used upon maps and globes. Some of these circles extend east and west, on each side of the equator, as you can see in Figure 107. The distance between them is measured, not by miles, but by degrees, each of which is equal to almost seventy miles. How many degrees are there from one of these circles to the next, in Figure 107? About how many miles is that? We can thus quickly learn how far any place that is on or near one of these circles is from the equator. For example, how many degrees north of the equator is New York City? Chicago? How many miles would that be?

Instead, however, of saying that a place is a certain number of degrees north or south of the equator, we say that it is in so many degrees *north or south latitude*. Latitude means simply the distance north or south of the equator. Places north of the equator are in *north latitude*, and those south of it, in *south latitude*. The circles running east and west, which are drawn to show the latitude of places, are called *circles of latitude*. By their help, find the latitude of New Orleans; of Boston.

Other circles, extending north and south, from pole to pole, help to locate

places in an east and west direction. A line that extends through England is agreed upon as the starting point in measuring. Places east of this line are said to be so many degrees in *east longitude*; places west of it, so many degrees in *west longitude*.

Longitude, as you see, simply means the distance east or west of this principal line; and these circles are called *circles of longitude*. In what longitude is New York City? Give both the latitude and longitude of Chicago. Locate other places, for example your own home, in the same way.

5. The Continents

On page 45 you learned that there is about three times as much water as land upon the surface



FIG. 118.—A map to show the land in the northern hemisphere that nearly surrounds the north pole.

of the earth. By examining the globe you can see that most of the land lies in the northern hemisphere. It almost surrounds the north pole, as you can see from the globe, or by looking at Figure 118.

There are two great masses of land here, one called Eurasia and the other North America. Besides these, there are three other great divisions of land—South America, Africa, and Australia. Point these out on the globe. Thus there are five great divisions of land

upon the earth, and each of them is called a *continent*.

The continent of *North America* is the one on which you live. Notice its form, which is clearly shown in Figure 119. It is quite broad near the north pole, and tapers down almost to a point just north of the equator. This gives it the shape of a triangle. Make a drawing of it.

1. Their shape and climate
North and South America

What part of this continent is in the frigid zone? In the torrid zone? In the temperate zone?



FIG. 119.—The continents of North and South America.

South America also has the form of a triangle. Draw its outline by using only three straight lines. Which of the American continents seems to have the more irregular coast line? Which, therefore, has the greater number of bays, capes, and peninsulas?

In what zones does South America lie? Point to parts of both North and South America where there is never any snow. Point to a part of North America where there is always snow.

Where must the Eskimo girl, Agoonack, one of the Seven Little Sisters, have lived (Fig. 120)? How would the climate change if you were to travel from the northern part of North America to the southern tip of South America? What differences would you expect to find in the plants? In the clothing of the people? Write a story about such a journey.

These two continents together are called the *two Americas*. They form what is known as the *New World*, which Columbus discovered.



FIG. 120.—An Eskimo child, dressed in furs, although the picture was taken in August.

You can see by the map that the two Americas are connected by a long, narrow neck of land, called an *isthmus*. This is the *Isthmus of Panama*. Any vessel that happens to be on one side of these continents, and two which must reach the other side, has to pass all the way around South America. If this isthmus were not in the way, a ship might sail directly between the two continents. To save so long a journey, the United States government, by the help of many thousands of men, is now digging a channel, or *canal*, across this isthmus. When finished, it will be broad and deep enough to let ocean vessels pass through. Then ships going from the eastern to the western coast of our country will save a journey of thousands of miles.

The *Old World*, which includes Eurasia and Africa, contains much more land



FIG. 121.—A map of Eurasia and Africa.

than the New World (Fig. 121). The largest mass, which is almost entirely surrounded by water, is called *Eurasia*. You will notice that it is connected with Africa by a narrow isthmus. This isthmus, called the *Isthmus of Suez*, already has a ship canal across it. Thus vessels may go from one ocean to the other without having to travel all the way around Africa, as they used to do.

The northern part of Eurasia lies in the north frigid zone, on the opposite side of the north pole from 1. *Asia* North America (Fig. 118). The continent extends a great distance east and west, as you see. Find for yourself how far south it reaches, and through what zones it extends. The eastern and larger part of the continent is called *Asia*. Read in the "Seven Little Sisters" about Pen-se, the Chinese girl, whose home was in Asia (Fig. 122).

The western part of Eurasia is called *Europe*. Long ago, before Columbus made his voyage 2. *Europe* to the New World, the most civilized people lived in Europe. The homes of Jeannette and Louise, two of the Seven Little Sisters, were in that country. If you have read the story, can you tell something about each of them?

Europe is usually considered one continent, and Asia another; but, as you can see from Figure 107, they are far less separated from each other than the other 3. *Reason for the name Eurasia* continents are. For this reason Europe and Asia are often classed together as one continent, and this is called Eurasia. The name is made of "Eur" from Europe, and "Asia."

This is the largest continent in the world. You see that it is very irregular, even more so than North America. Point toward this continent. Walk toward it. Which is probably its warmest part?



FIG. 122.—Chinese children.

Africa South of Europe is the continent of Africa. Draw its outline and compare it with that of South America. Is its coast line regular or irregular? In what zones does it lie?

The Desert of Sahara, where the nomads live, is in the northern part of Africa (Fig. 123).



FIG. 123.—Children of the desert.

It is in this continent that the Negroes have their home; and here lived Gemila, the child of the desert, and Manenko, the little dark girl (Fig. 124), two of the Seven Little Sisters. The Negroes of our country are descendants of people who were brought from Africa many years ago.

Look on a globe to see in what direction you would have to travel if you were going to Africa. Could you reach it by going in more than one direction?

The many large islands south and southeast of Asia are called the *East Indies*; and the central one of the peninsulas on the south side of Asia is called *India*. In Figure 106 find this peninsula, and these islands.

It was this part of the world that Columbus hoped to reach, when he sailed westward from Europe on his wonderful voyage. Can you show on a globe that, if the New World had not

been in his way, he might have reached India and the East Indies?

None of the East Indies is large enough to be called a continent. Just south of them, however, is an island, called *Australia*, so large that it is generally classed as a continent. It is the smallest of the continents, and



FIG. 124.—Negro school children and teacher in Africa.

is the only one that lies wholly in the southern hemisphere.

Find Australia on the globe; also in Figure 107. Is the northern or the southern part the hotter? Why should you expect any difference in temperature from north to south?

6. The Oceans

The ocean water forms only one body of water; but for long distances some parts are largely separated from others by the continents. These separate parts are given different names.

The parts of the ocean that are of most importance to us are those that lie to the east and west of the United States. That on the east, between North America and Europe, is called the *Atlantic Ocean*

. 125). This is the water that must | brought to us across the Atlantic from crossed in going to Europe; and it | the Old World, and we send many of our products across this ocean to . Europe.



FIG. 125.—Map of the Atlantic Ocean.



FIG. 126.—Map of a part of the great Pacific Ocean.

this ocean that Columbus crossed. | these is the *Arctic Ocean*, *Ocean*
y things to eat and wear are | which extends around the north pole,

On Figure 125 observe that the Atlantic Ocean extends far to the south, between South America and Africa, as well as far to the north. In what part must the water be warmest? In what parts is it cold, and perhaps covered with ice? On the globe find which continents border this ocean.

The part of the ocean lying west of North America is called the *Pacific Ocean* (Fig. 126). What continents border it (Fig. 106)? It is the largest of the oceans, and covers more than one third of the earth's surface. Walk toward it. In what zones does it lie?

Not so many products are brought across the Pacific Ocean for our use as across the Atlantic. Yet Japan, China, and the Philippine Islands are on its farther side, as you can see on the map. We ship some articles to these countries, and they send some to us. Many Chinese and Japanese have come across this ocean to the United States. Where might they land?

On Figure 107 you will find a third great body of water, called the *Indian Ocean* (Figs. 121 and 127). What continents border it? Notice that it lies directly south of India, the peninsula in Asia which Columbus was seeking (p. 86). In what zones does this ocean lie?

There are two other oceans, making five in all. One of these is the *Arctic Ocean*, which extends around the north pole,



FIG. 127.—The Indian Ocean and the western part of the Pacific Ocean.

and is almost shut in by Eurasia and North America (Fig. 118). Notice that it is connected with the Pacific Ocean by only a very narrow body of water, or *strait*, called Bering Strait (Fig. 106). North America and Asia come close together at that point.

The Arctic Ocean has a freer connection with the Atlantic on the east. Huge masses of ice, called *icebergs* (Fig. 128), often float



FIG. 128.—Large numbers of icebergs floating in the water of the Arctic Ocean.

down from the Arctic into the Atlantic Ocean. Sometimes there are so many that they are dangerous to vessels sailing between North America and Europe.

Figure 129 shows the *Antarctic Ocean*, which surrounds the south pole. As you see, there ^{The Antarctic} is a great mass of land *Ocean* around that pole. It is large enough to be called a continent; but, since no



FIG. 129.—Map of the Antarctic Ocean, which surrounds the Antarctic continent.

one lives upon it, and since it is covered with snow and ice all the year through, very little is known about it.

This ice-covered land is surrounded by the Antarctic Ocean, on which there is always much floating ice. Observe that this ocean is not separated from the three great oceans by land, as the Arctic is. Are the Arctic and Antarctic oceans of more,

or less, importance to us than the other oceans? Why?

The water in the ocean occupies great hollows on the surface of the earth. The depth of the ocean varies greatly, though it is a little over two miles deep on the average. In many places, however, the ocean is more than four miles deep; and in one place, in the Pacific Ocean, the depth is nearly six miles. If the highest mountain in the world could be placed in the water at this point, its peak would not rise above the level of the sea.

Beneath the oceans there is solid rock, just as there is beneath the soil of the land. This rock is covered with a coat of mud made of the shells of tiny animals, most of them smaller than the head of a pin. They have lived near the surface of the sea, and upon dying, their shells have slowly dropped to the bottom. Some of the chalk used in schools was once just such mud, before it was raised to form layers of chalk on the dry land.

The bed of the ocean lies so deep below the surface of the water that it is as dark there as our darkest night. Yet fish are living in these



FIG. 130.—A fish caught on the bottom of the deep ocean, where no sunlight ever reaches.

dark ocean depths (Fig. 130). Since there is no sunlight, they have little use for eyes, and some of them have no eyes. Others see by means of the light that they themselves make, called phosphorescent light. This is like the light that the firefly gives out at night.

The bottom of the ocean is, for the most part, a level plain. In many places, however, there are islands rising from the sea floor, as a glance at the map will show.

Many of these islands are *portions of mountain chains*. They are like the mountains on the continents, with only the highest peaks rising above the water. Other islands are the peaks of *volcanoes*. These have been made of melted rock, or *lava*, that has been forced up from inside the earth. Still others are what are known as *coral islands*. These have been formed in the following interesting way:—

Some of the tiny creatures that live in the ocean are called *coral polyps*. They build hard,



FIG. 131.—Coral growing in the sea.

limy coral (Fig. 131), such as you have no doubt seen; it is as hard as rock. Where the ocean water is warm, as in the torrid zone, these animals live in immense numbers, millions of them around a single island.

Each polyp helps to build the coral, which is a sort of house in which it lives. When it chooses to do so, the polyp can draw itself into the little cave that forms its home. It can thus escape enemies that might devour it.

At other times the polyp stretches out beyond the surface of the hard coral, spreading out like a fully blossomed flower. The polyps differ greatly in color, being white, pink, purple, red, yellow, brown, and other colors. It is a truly beautiful sight to see them spread out in the water, giving the appearance of a flower garden in the sea.

When these coral animals die, the hard, stony

homes that they have built, remain. Then other polyps build upon these remains, and this continues until the polyps build the coral up to the surface of the water. It is in this way that coral islands are formed (Fig. 132), and there

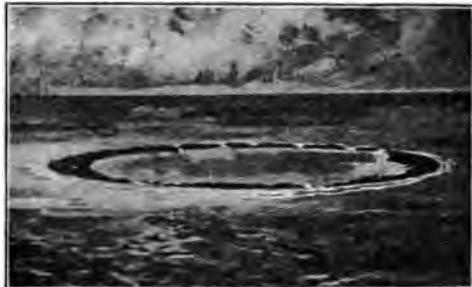


FIG. 132.—A ring-shaped coral island in the open ocean.

are thousands of them in the warm oceans, especially in the Pacific and Indian oceans.

FORM AND SIZE. 1. What did people formerly think about the form of the earth? 2. What is its form? 3. Review Questions. Late the story of Columbus. 4. Why did he call the savages Indians? 5. Why was the land he discovered called the New World? 6. What makes Magellan's voyage important? 7. Explain why the earth does not appear to us to be a sphere. 8. What is meant by the diameter of the earth? By the circumference? What is the length of each?

DAILY MOTION. 9. Describe the daily motion of the earth. What is this motion called? 10. How does this motion cause day and night? 11. How does it cause sunrise and sunset? 12. Why can we not observe that the earth is rotating? 13. Why is not every loose object hurled from the earth by this rapid motion? 14. What is meant by the axis of the earth? By the poles of the earth? 15. Walk toward each of the poles. 16. What is meant by the equator? How long is it?

THE ZONES. 17. Give the cause of the great heat in the torrid zone. 18. How wide is that zone, and what are its boundaries? 19. Where are the two temperate zones? 20. Why is the heat less there than in the torrid zone? 21. Where are the frigid zones? 22. What is meant by the northern hemisphere; by the southern hemisphere? 23. What is meant by the eastern and the western hemispheres?

LATITUDE AND LONGITUDE. 24. How are places located on the earth? 25. What is latitude? Longitude?

THE CONTINENTS. 26. Name the five continents, counting Eurasia as one. 27. Write their names. 28. Walk toward each. 29. What is the shape of North and of South America? Show the shape of each by a drawing. 30. Tell about the climate of each. 31. Of what importance is the Isthmus of Panama? 32. What can you tell about Eurasia? Why this name? 33. Tell what you can about Africa. 34. Locate and give the principal facts about Australia. 35. What part of the world, near Australia, was Columbus hoping to reach?

THE OCEANS. 36. What two oceans are of most importance to us? 37. What do you know about each of them? 38. Where is the Indian Ocean? 39. Where are the Arctic and Antarctic oceans? 40. Why are they of little importance to us? 41. What can you tell about the depth of the ocean? 42. About the ocean bottom? 43. What are the three causes for islands in the ocean? 44. What is the result of the work of the coral polyps? 45. What oceans touch North America? 46. Name the five oceans. Write their names.

1. Trace Columbus's voyage on a globe. Find India and see how one can go by water from Europe to India by sailing eastward; by sailing westward. **Suggestions**
2. Make a sphere in clay. Measure its diameter with a needle, and its circumference with a string. 3. Locate the poles on such a sphere; and also represent the equator. 4. Use a horseshoe magnet to see how it attracts iron. 5. With a globe or an apple, and a lamp, show how it is day on one side of the earth while it is night on the other side. Show also why the sun appears to rise in the east. 6. Who were Atlas and Aurora? 7. Where did people, long ago, suppose that the sun went at night? 8. Write a story telling the kinds of clothing you would need in going from the north to the south pole. 9. In passing southward on such a journey, in what different directions would you look at noon to see the sun? 10. Would you expect a sudden change in temperature in crossing the Tropic of Cancer or of Capricorn? Why? 11. If there were no watches or clocks, how could you learn the time?

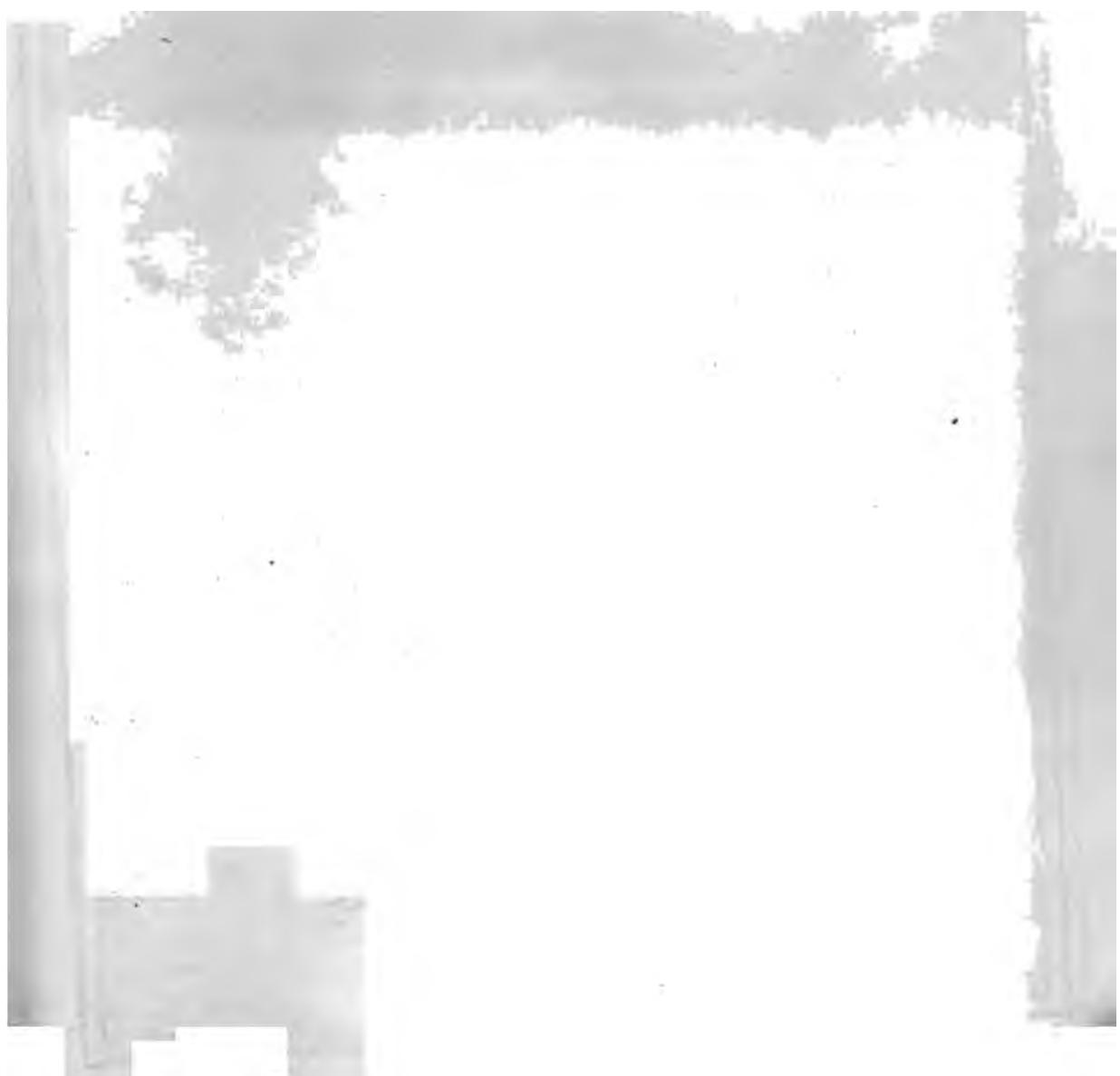




FIG. 133.



FIG. 134.

very old, and had been settled for centuries when America was discovered. Dating the birth of our nation from 1776, how old is it?

One reason for this rapid growth in population is the fact that our country Reasons for this growth is situated in the *temperate zone*. The great heat in the 1. Our temperature torrid zone makes it difficult to work and unhealthful to live there. On the other hand, the extreme cold of the frigid zone makes it difficult to get a living, no matter how hard one works. In the temperate zone, we find neither of these drawbacks. There is not too much heat for comfort or health, and yet there is plenty for the growth of plants.

Our country is so large that there is much difference in temperature between one part and another. In southern Florida, there is never any frost or snow, and such crops as bananas and pineapples can be grown, as in the torrid zone. Cotton, sugar cane, rice, and oranges, which require a warm climate, are also grown in our Southern States. Farther north we can produce the more hardy crops, such as wheat and oats, that thrive in a cooler climate. There are few countries in the world that have such variety of temperature as ours.

Over a large part of our country there is plenty of rain for farming and 2. Our rainfall gardening. In several of the Western States, however, there is so little rain that no crops can be grown without irrigation. In fact, some parts of the West are true deserts, with farming only on the oases, as in the Sahara. In spite of their dryness, a large portion of these sections is useful for grazing; and the western part of the United States is one of the most important regions in the world for sheep and cattle. Thus the differences in rain-

fall, as well as temperature, help to give us a variety of products.

Fertile soil, as well as heat and rain, is necessary in order that people may have food, clothing, and 3. Our soil shelter. Few countries in the world have as much deep, rich soil as our own. There are many kinds, too, so that many different crops can be raised.

On the whole, the climate and soil of our country are so favorable, and so varied, that the United States produces almost all the crops necessary for food, clothing, and shelter.

The mineral products, from the rocks beneath the soil, are also of great value. In our western mountains 4. Our minerals are gold, silver, lead, and copper mines of untold richness. Enormous amounts of copper and iron ore are mined in the states that border Lake Superior. Coal, too, is abundant in many of our states, so that there is plenty of fuel for manufacturing these various metals into useful articles. In addition, we have valuable building stone of many kinds, and clays, salt, and other useful mineral products. All together the rich supply of minerals found in the United States is one of the most important reasons for our remarkable growth as a nation.

It is of great importance that we have so many different kinds of land in our country. There are the 5. Our plains coastal plains, that lie between the Appalachian Mountains and the sea. Here the land is so level and fertile that farming is easy. Far larger than these are the central plains, through which the Mississippi River and its tributaries flow. This level country

a date whose anniversary you celebrate every year. Independence was not gained, however, until later, after several years of hard fighting and much suffering.

Our ancestors, who fought in this war, formed a government of their own which they called the United States. At first there were only thirteen small states in the Union, all near the Atlantic coast. Gradually other states and territories were added, until our country now extends across the continent, as you see.

England was able to keep a large part of the continent, which is called ^{3. Canada and Newfoundland} the *Dominion of Canada*. This country, which is still a British colony, is a union of states, or *provinces*, like our United States.

You observe, on the map, the large island of *Newfoundland*, in the extreme eastern part of the continent. This also was kept by England and is still a British colony; but it has never joined the Dominion of Canada and has, therefore, a separate government.

The extreme northwestern part of North America, called *Alaska*, was first explored by the Russians, ^{4. Alaska} and they owned it for a long time. Russia finally sold it to the United States, and it still belongs to us.

Of course, where two countries lie side by side, as do Canada and the United States, there must be some place where one country ends and the other begins. Such a place is called a *boundary*. The boundary lines between the different nations are marked on the map (Fig. 133) by heavy lines. Point them out.

In some parts you will see that a *natural boundary*, such as a river or a chain of lakes,

has been chosen to separate two neighboring countries. In other places the boundary does not follow any natural line. In some cases it is even a straight line, cutting across rivers, lakes, and mountains. Examine the boundary of the United States to see how much of it is natural.

Where the boundary is only a straight line, it is marked by a row of posts or stone pillars, a few rods apart. These you could easily see if you were to cross from one country to another, where there is such a boundary. On your drawing of North America, mark those boundaries of the United States which are natural.

Figure 133 is a map of North America showing the boundaries of ^{Study of maps} the different countries, and ^{1. Political Maps} the location of the largest rivers and cities. Such a map is called a *political map*.

Find Greenland on this map. Would you expect it to be an important island? Why? Trace the Mississippi River. Three other great rivers of North America are the St. Lawrence, the Mackenzie, and the Yukon. Find each. What would you say about the importance of the Mackenzie and Yukon rivers, in comparison with that of the St. Lawrence and the Mississippi? Why?

Figure 134, a *physical map*, is a very different kind of map from ^{2. Physical Maps} Figure 133. Its purpose is ^{Maps} to show the height of the land, or the high and low parts of the continent.

What great mountain system, or highland, do you find in the western part of North America? What great highland in the east? In what direction does each of these highlands extend? Which is the broader? Which the higher? Trace, as nearly as you can, the boundaries of each.

Where is the lowest land between these two highlands? Show the length and width of the Mississippi Valley. Notice the slope east of the Appalachian





FIG. 136.



FIG. 136.



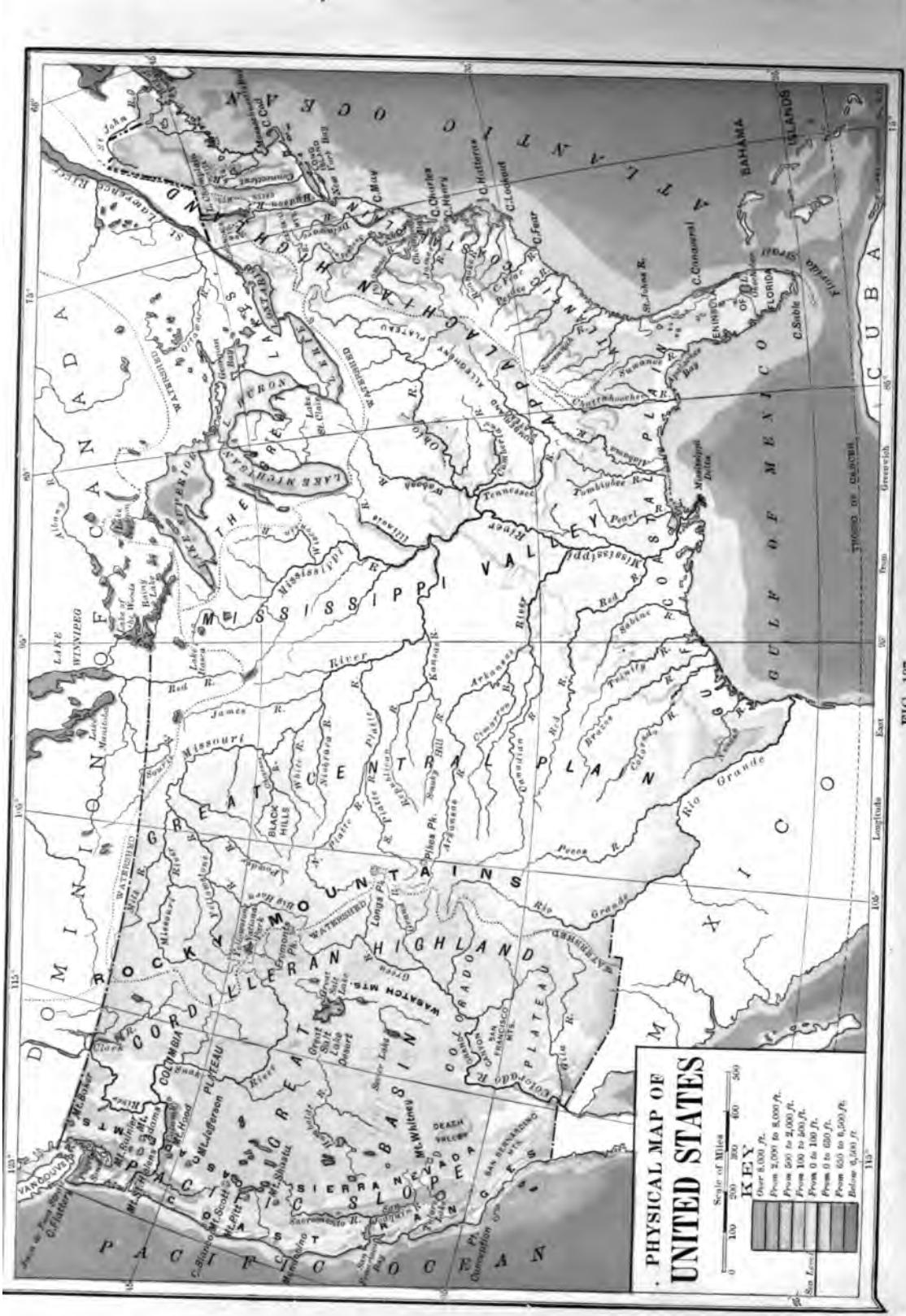


FIG. 137.



keep the fish, and when they return, vessel may be full of fish either ~~d~~ or on ice.

The principal fishing port in the United States is GLOUCESTER, in Massachusetts, from which hundreds of schooners sail every

Fishing vessels also sail from BOSTON, PORTLAND, and other seacoast cities. Find the places named. The fish go into these and neighboring ports



FIG. 143.—Fishing schooners on the stormy ocean far from land.

sent to all parts of the United States, even to foreign countries.

Marrying and mining in these states employ a great number of men. Note, ~~ing and~~ from the following description, how many kinds of mineral products are found here.

Each of these states produces granite: Maine, Massachusetts, and Vermont supply the greatest quantity. More than half the granite used in the country comes from the Northeastern states. Marble is found in some parts of these states, usually near RUTLAND, Vermont. Here quarries of fine white marble that is much used for monuments.

Slate, used for roofs of houses, for writing slates, and for other purposes, is found in several of the Northeastern States, especially in Pennsylvania and Vermont. There is much sandstone that is good for building; there is clay, for making bricks, drainpipes, flowerpots, and tiles; and there is limestone for the manufacture of lime and *Portland cement*.

Salt is another very important mineral product of this region. Since this is the one mineral that *everybody* must have, it was fortunate

^{2.} Salt

for the early settlers that salt springs were found in central New York. To these springs the wild animals and the Indians had long been in the habit of going for the salt they needed. The white men found the salt springs so valuable that the production of salt soon became an important industry at that point, and it caused the begin-

ning of the city of SYRACUSE.

The salt water of these springs flowed from a great bed of salt that lies underground, beneath a large part of central New York. By boring down through the soil, and some layers of rock, the salt bed itself can be reached. Many such borings have been made, and much salt is now obtained through them.

Mineral oil and natural gas are two other important mineral products of these states. These two substances lie imprisoned deep down in the rocks, and when a hole is bored down to them (Fig. 144), they escape to the surface, sometimes in great gushing fountains.

^{3.} Oil and gas

At the close of the War of Independence, all the land east of the Mississippi River belonged to the Union, except Florida and a narrow strip along the coast west of Florida. For many years, however, the part between the Appalachian Mountains and the Mississippi River was not made into states. Indeed, it was a wilderness about which very little was known, because the Appalachian Mountains were like a great wall, shutting people out of the Mississippi Valley.

Trappers and traders first forced their way into this valley. Among these were David Crockett and Daniel Boone, who had many thrilling adventures with the Indians, some of which you may have read about. Then, when it was learned what an attractive region this was, settlers rapidly followed, and states were soon formed. Name some of these states.

Pioneers soon pushed across the Mississippi River, over the *Great Plains*, as far as the Rocky Mountains. Nearly all the vast region between the Mississippi River and the Rocky Mountains, except Texas, was bought from France in the year 1803. Name some of the states that have been formed from it.

Florida, together with a narrow strip of land along the Gulf of Mexico, was ^{3. Florida and} bought from Spain in 1819. ^{Texas} Texas, which had once been a part of Mexico, obtained its independence from that country; and later it entered the Union.

The highlands of western United States are much broader and more difficult to cross than the Appalachian Mountains, and for a long time few men were daring enough to try to reach the Pacific coast. When rich gold deposits were discovered near the west coast, however, many thousands started in haste for that region. Partly by purchase, and partly by war with Mexico,

4. States west of the Rocky Mountains



FIG. 138.—Map to show when and how the United States obtained its territory.

our country had already obtained possession of this western land; and, as it became rapidly settled, states were formed from it. Name some of them.

At the close of the War of Independence, in 1783, there were only about three million white persons ^{Our growth in population} living in the United States. Now we have about ninety-two million, or more than are found in all the other countries of North and South America together. We have more people than France, or Germany, or any European nation except Russia. It should be remembered, too, that those countries are

very old, and had been settled for centuries when America was discovered. Dating the birth of our nation from 1776, how old is it?

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makes one of the finest farming sections in the world. There are also many smaller plains, and much gently rolling and hilly land suited to agriculture.

The higher hills, mountains, and plateaus are valuable in a different way. They cause the moisture in the air to be condensed into rain and snow, which keep the rivers filled with water. In addition, they are the source of valuable minerals, and they are often covered with forests, which supply us with the lumber that we need for so many purposes.

The minerals and other raw products have to be transported from the mines to the factories, and then ^{6. Our conveniences for transportation} the manufactured articles must be distributed far and wide over the country. It is important, therefore, that there be abundant means for shipping goods.

The railroads now do much to supply this need, but our natural highways, or waterways, have met it well from the beginning. First of all, note (Fig. 136) how the Mississippi River and its tributaries make it possible for boats to reach the ocean even from the heart of our country. Trace some of the larger of these rivers, and write their names.

The Great Lakes, on the north, are other important waterways on which vessels may travel for many hundreds of miles. How many such lakes are there? There are also many smaller rivers and lakes of importance for transportation. Can you name some of them, and point them out on the map?

It is important to send some goods to foreign lands, and to bring others from foreign countries to our shores. Here again the United States is fortunate.

One of our coasts faces Europe, and is well supplied with excellent harbors. Trace this coast line, to see how irregular it is, thus making fine harbors possible.

Our Southern coast, too, has some excellent harbors, from which ships can easily reach Europe, the West Indies, Mexico, and the countries of South America. Vessels may also go from port to port along our coast, carrying goods from one place to another.

Our Western coast faces Asia, where there are enormous numbers of Chinese, Japanese, and other people. This coast likewise has some excellent harbors, from which steamship lines now run to many ports on the Pacific and Indian oceans.

No other country has so favorable a situation for trade with all parts of the world as ours. In fact, no other large country has a seacoast, with an abundance of good harbors, on both the Atlantic and Pacific oceans.

There have been still other powerful attractions to our country. One of these has been the free land. Any one who has cared to come here and live for a few years could obtain a good-sized farm to live upon. That has been a help indeed to many a man. So many people have been attracted to our country, that almost all the free farm land has now been taken up.

Even where there was no land to be given away, it has often been possible to buy it at a very low price,—only a few dollars an acre,—which even a poor man, with energy, could hope to pay. Millions of people have been attracted to the United States by the free and the cheap farm lands.

In some countries of Europe many of the people are still in ignorance. In the ^{8. Our free education} United States, on the other hand, an effort is made to give every one an education. One of the first things our forefathers did was to establish schools, and now there are schools, colleges, and universities all over the land. Most of this education is free, and any one can obtain it. Our excellent system of education is one of the chief causes of our rapid advance, for educated people can do things which ignorant people cannot do.

Another great attraction to many persons has been our free government. In ^{9. Our free government} some countries the rulers do not let the people share in the making of laws. They seize private property; they arrest men and throw them into prison, or drive them from the country, or put them to death, without trial.

After the War of Independence, our forefathers established a government called a *democracy*. In this, the people elect some men to make laws, and others to execute them. That is the kind of government we now have. All the officers are thus really *servants* of the people, and not masters; and they are paid for their work by the people. The object of this government is to help every one, as far as possible, and not to worry or oppress any one.

Millions of men have died fighting against a despotic form of government; and it is no wonder that other millions have braved great hardships to reach a land where they were free from despotic rulers. There is, perhaps, no country on the earth where an honest man, with ability and energy, can prosper so easily as in the United States.

These are some of the more important reasons why our population has increased so rapidly. Aside ^{Immigrants to} from the people who have ^{the United States} been born in this country, millions have come from Europe and Asia; and they still come in almost every ship that carries passengers. Such people are called *immigrants*, and most of them land at New York.

From that city they scatter in all directions, and settle in every part of our country. These immigrants have greatly helped to develop our land, and to make the United States one of the great powers of the world. They have been eager to come here, and most of them have been eager to stay, for they have learned to love this land. You probably know some immigrants yourself, for they are all about you. Ask some of them why they came here, and whether this country is as good to live in as the one they left.

1. What is the size of the United States? How does it compare in size with other countries? 2. Name the first thirteen states of our Union, and locate ^{Review Questions} them. 3. What great sections of land have been added to these, to make the number of states that we now have? 4. Tell about our growth in population. 5. Show that our temperature is one reason for so great a population. 6. How is our rainfall a second reason, and our soil a third? 7. How are our minerals a fourth reason? 8. Show that our plains and mountains are a fifth reason. 9. How have our conveniences for transportation helped our growth? 10. How has our free land helped? 11. Our free education? 12. Our free government? 13. Tell about the immigrants to the United States.

1. Read the life of Daniel Boone or David Crockett. 2. Find out what steps a man has had to take, in order to get ^{Suggestions} possession of free land in this country. 3. Learn what is done with the immigrants when they land at Ellis Island in New York Harbor. 4. Do you see any dangers to this country in allowing all people to come here from other countries who desire to come?

IV. THE NORTHEASTERN STATES

1. Name these states. Write the names.
2. Which has no seacoast? 3. Which state extends farthest east and north?

Map study Which farthest south? Which farthest west? 4. What natural boundaries do you find between them? 5. What mountain system crosses these states (Fig. 137)? 6. Which states are most mountainous? 7. Name and locate the chief rivers. 8. Find New York City. Using the scale, about how far is it from New York City to Boston? To Philadelphia? 9. Walk toward New York City. 10. In what direction would one have to sail from New England, in order to reach England?

In order that our country may be more easily studied, we divide the states into groups. The first group of states to be studied are those in the Northeast. They include the *New England States* and some of those along the middle part of our Atlantic coast, usually called the *Middle Atlantic States*. These nine states together are here called the *Northeastern States*.

Of these nine states the six farthest northeast are called *New England*. What are **The area of these states** their names? What are the names of the other three? On the map of the United States (Fig. 136) you can see what a small part of our country these states make. All of them together are much smaller than Texas, yet they form nearly one fifth of our whole number of states.

Which is the smallest of these states? It is the smallest state in the Union. One of the New England States is about as large as the other five together. Which one is it? Even this, however, is much

smaller than New York, the largest of the Northeastern States.

In spite of their small area, these states contain about twenty-six million inhabitants, or about one fourth of the people in the United States. One of them, New York, has more inhabitants than any other state in the Union. It also con-



FIG. 139. — A view in the White Mountains of New Hampshire showing a railroad winding along a valley at the base of a steep mountain side.

the largest city in the New York State. Pennsylvania is next to New York in population, as well as in size.

It is interesting to learn why so many people have crowded together in this small section. Why? What special kinds of work can attract them here?

The principal occupations are the same as those found elsewhere; n



FIG. 150.—The broad and deep Hudson River as seen from West Point.

the Hudson as far as the mouth of the Mohawk River (Fig. 150).

The wide mouths of these rivers make excellent harbors, as is proved by the large cities there. Name and locate some of these cities.

The need of more waterways into the interior led very early to the digging of canals. Several have been built, the longest and most important of which is the *Erie Canal* (Fig. 140) extending from the Hudson River, near Troy and Albany, to Buffalo on Lake Erie. Measure its length. This canal is especially important, because it connects the Great Lakes with the ocean by way of the Hudson River. On that account it has been a great highway of commerce. Name several cities along its course.

About the time the Erie Canal was finished, the locomotive was invented, and railroads began to be built. After that, there was no pressing need for more canals, since railroads could take their place.

Railroads extend from north to south through these states; but most of the great railroads run from the coast westward, toward the inter-

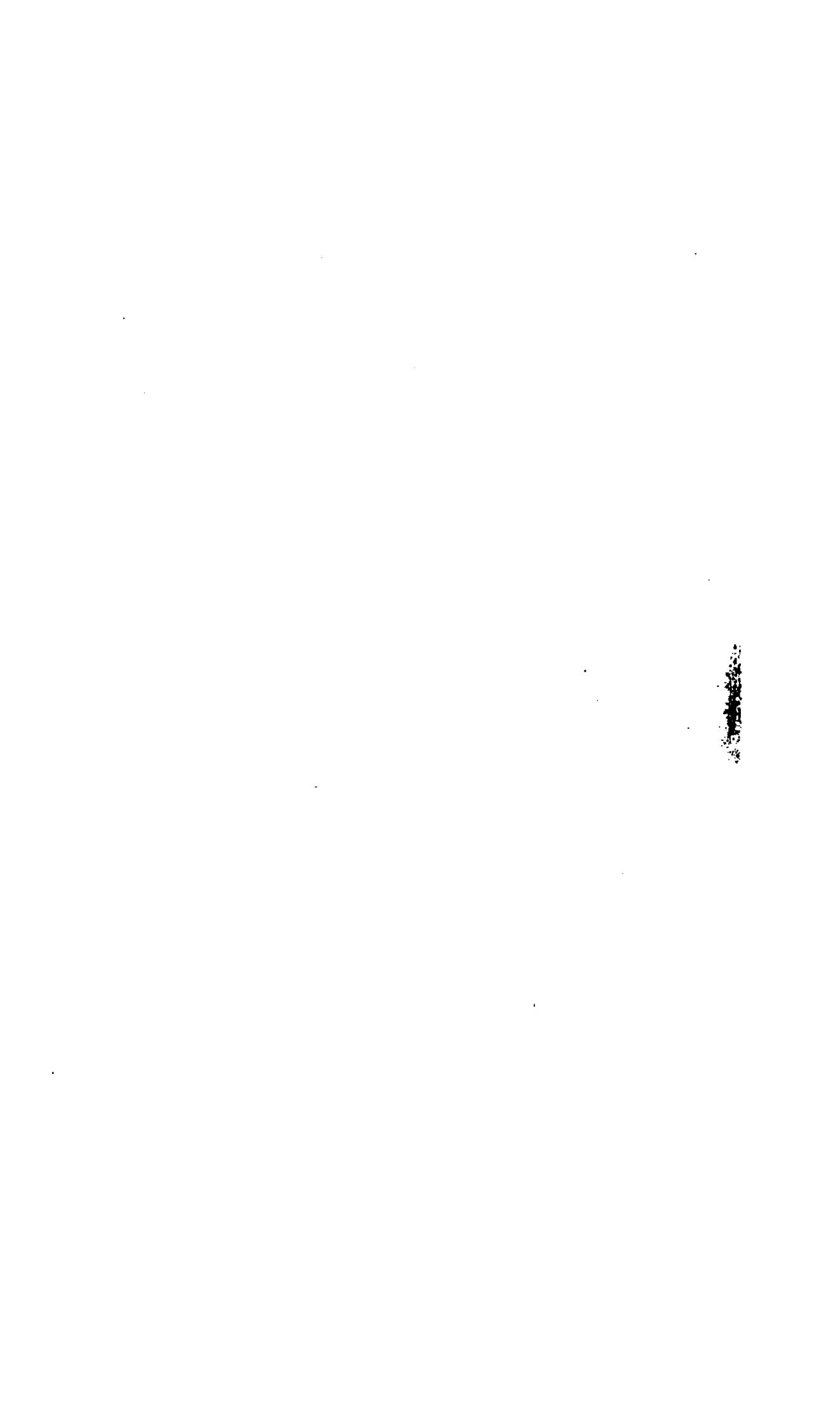
ior of the country. The Appalachian Mountains have been a great hindrance in building them. Why? Yet several fine roads now cross these mountains (Fig. 151). One of the first was the New York Central, running from New York City to Buffalo. It follows the Hudson River to Albany, then takes the same course westward that the Erie Canal does. All the important cities of these states are now connected by rail.

The half-dozen occupations thus far named could not be carried on, of course, without a large amount of buying and

Why trade is especially important



FIG. 151.—A broad horseshoe curve where the Pennsylvania Railroad ascends the steep grades in crossing the Appalachians.



addition, railroads run in all directions, so that transportation is well provided for.

Because of these unusual advantages for shipping, thousands of factories have been located in or near New York, and in them are made almost all kinds of manufactured articles that people want. Probably the greatest manufacturing industry is the making of clothing. The refining of petroleum is one of the important industries in Jersey City and in Brooklyn. Paterson is noted for the manufacture of silk. Large quantities of iron and steel goods are also made in this neighborhood.

the third city in size in the country. As is the case near New York, there are other large cities near by. Among these are CAMDEN and TRENTON in New Jersey, the latter being noted for its manufacture of fine pottery.

The products of Pennsylvania and New Jersey, such as fruit, lumber, iron, coal, and oil, together with the manufacture of iron and other goods, have helped make Philadelphia a great city. This port, like New York, has much foreign commerce, with steamship lines to all parts of the world, and railroads connecting it with the interior.



FIG. 153.—A part of Boston, with its fine harbor beyond.

Merchants from all parts of the United States come to New York to purchase goods for their stores. Many great buildings in the city are given up entirely to this kind of trade, called the *wholesale trade*. A number of the buildings in New York are as many as thirty stories in height, some are forty or more, and one, including its tower, is fifty stories high. It is no wonder that New York City is called the *metropolis*, or great city, of the United States.

Only ninety miles southwest of New 2. ^{Philadelphia} York is PHILADELPHIA, situated as far up the Delaware and vicinity River as large vessels can go. It is

The largest city northeast of New York is BOSTON, which is the fifth in size in the United States. It has an excellent harbor (Fig. 3. ^{Boston and other New England ports} 153), and although there is no water route toward the west, numerous railroads lead from it to the north, west, and southwest. Boston has a large amount of manufacturing, and ranks next to New York in foreign commerce. Near by are several important manufacturing cities, such as CAMBRIDGE, and others whose names cannot be placed on so small a map.

as grapes and peaches are raised. Apples, grapes, and other fruits also thrive on the fine farm land of western New York, especially near Lakes Erie and Ontario. There is much excellent farm land in New York.

While a great deal of food is raised in the Northeastern States, there is not nearly enough to feed the people. Therefore much is brought from the more fertile farming states of the Mississippi Valley. Wheat for bread is shipped to these states in great quantities; so are meat, sugar, and other common foods.

Most of the land in the Northeastern States was once wooded; but most of the Lumbering trees have been removed from those parts that could be made into farms. Forests are now mainly found, therefore, upon the mountain slopes and upon the hilly, rocky land (Figs. 139 and 141).

Lumbering does not employ a great number of men; on this account not many people live where it is carried on. Yet the industry is very important, because there are so many people in these states who need articles made of wood. Among these are tables, chairs, and paper. Add to this list as many more objects as you can.

Lumbering is extensively carried on in Maine (Fig. 142); in the Adirondack and Catskill mountains in New York; in the Appalachian Mountains; and in the plateau region of western Pennsylvania. Find each of these regions on the map.

In and near these forest-covered sections are many lumber mills, and many paper mills, in which wood is ground into pulp for making paper. Much of

the paper used for books, newspapers, letters, and wrappings is made from wood. Probably a large part of the paper that you use has been manufactured from the trees of the forest.



FIG. 142.—Lumbermen at work in winter in the woods of Maine.

Fishing is another occupation of much importance, though it employs few men. Along the eastern coast are **Fishing** found cod, halibut, mackerel, herring, bluefish, clams, and other food fish. At the time of the early settlements, these food fish were abundant close by the rocky New England shore; but so many have been caught along the coast, that they are now far less common.

To-day, in order to catch large quantities of cod, halibut, and mackerel, it is necessary to go far from land. Men go out to sea in **2. How caught** two-masted sailing vessels, or *schooners* (Fig. 143); and when they leave port they often expect to be gone for weeks, and to travel many hundreds of miles. They carry either salt or ice with which

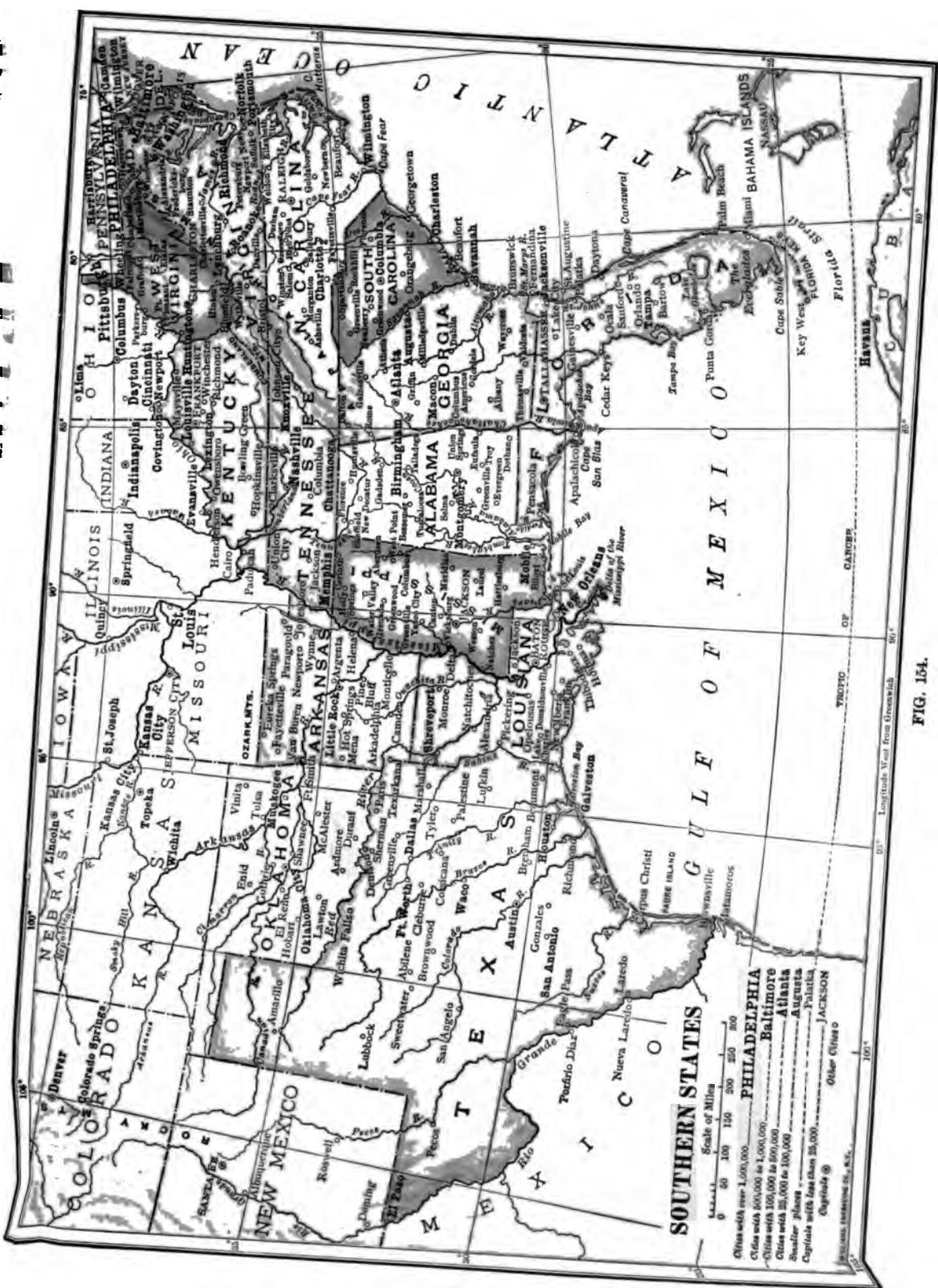


FIG. 154.



FIG. 144.—A view in the oil fields of western Pennsylvania. Each of these small towers, or derricks, stands over an oil well. The derricks were used in boring the wells.

The natural gas is then piped, even hundreds of miles, to be used for lighting cities and as fuel in factories and houses. The oil, or *petroleum*, is also allowed to run in pipes, like water, to *refineries*, where it is changed to kerosene oil, gasoline, naphtha, vaseline, and other valuable products.

The pioneers knew nothing about either of these substances. When they came to this country, they used either candles or lamps, in which some animal oil, such as whale oil, was burned. Very likely, even your great grandfather, when he was a boy, did not know of kerosene oil.

There is much *iron* produced in the Northeastern States. It is obtained from 4. Iron and coal iron ore, which looks very little like iron; it often looks like reddish earth, and must be melted before the iron can be obtained from it.

When the pioneers pushed across the Appalachian Mountains, they discovered rich beds of iron ore. In the same region they found large quantities of coal. As coal is a good fuel, it thus became possible to get the iron from the ore easily, and to make articles of iron. So there grew up a great iron industry in this part of the country.

Most of the iron ore mined in these states comes from Pennsylvania and New York. Soft or *bituminous coal* is mined in western Pennsylvania, near PITTSBURGH and ALLEGHENY, now united with Pittsburgh (Fig. 145); and hard coal, or *anthracite*, is found in the eastern part of the state, among the mountains near SCRANTON and WILKES-BARRE.

Much coal is needed, also, for stoves and furnaces in houses, for use on railways, and for producing steam in factories. There is, therefore, a great demand for it, and every year it is shipped by thousands of car loads to New York, Philadelphia, and elsewhere. Indeed, the prosperity of every city in all this region depends largely on the coal and iron.

Manufacturing is even a greater industry in these states than mining. It is, in fact, more important *Manufactured* here than in any other section of the United States, and is one of the chief reasons why there are so many people in the Northeastern States.

The raw materials mentioned in the last few pages, especially coal and iron,



FIG. 145.—Miners working far underground in a bituminous coal mine near Pittsburgh. The machine, in front, is drilling a hole in the thick coal seam that forms the wall on the right.



FIG. 146.—Niagara Falls, whose power is made to produce electricity for use not only near the Falls, but in many cities and towns in central and western New York.

are one important cause of so much manufacturing. The iron is shipped to many cities and made into stoves, engines, guns, ships, knives, and a thousand other things. See how long a list you can make of iron and steel articles.

PITTSBURGH, in western Pennsylvania, is especially noted for iron and steel manufactures; also READING, HARRISBURG, the capital of Pennsylvania, and PHILADELPHIA on the coast.

In New York State, water power, as well as steam, is much used for running the machinery of factories. For instance, Niagara (Fig. 146), which is the greatest waterfall on the continent, furnishes water power for extensive manufacturing near the Falls. BUFFALO, the second city in size in the state of New York, is also supplied with Niagara power, although it is twenty miles from the Falls. Indeed, this power is carried by wire, in the form of electricity, even into central New York.

ROCHESTER, at the falls of the Genesee River (Fig. 147), has many flour mills and other factories run by water power. The cities on the Mohawk River are also engaged in manufacturing. What are their names?

All the cities in this section, both large and small, are engaged in manufacturing. Some of them make a specialty of one or two articles. For instance, near ALBANY, the capital of New York, is TROY, where the making of shirts, collars, and cuffs is the leading industry. In other cities many kinds of articles are manufactured.

In New England it is more difficult

1. In Pennsylvania, New Jersey, and New York

to obtain coal for steam, because very little coal is found there. 2. In New England It has to be shipped there from Pennsylvania and elsewhere.

On the other hand, water power is abundant. Many of the rivers of New England are short and swift, (1) How power is obtained and their courses are interrupted by rapids and falls. In one

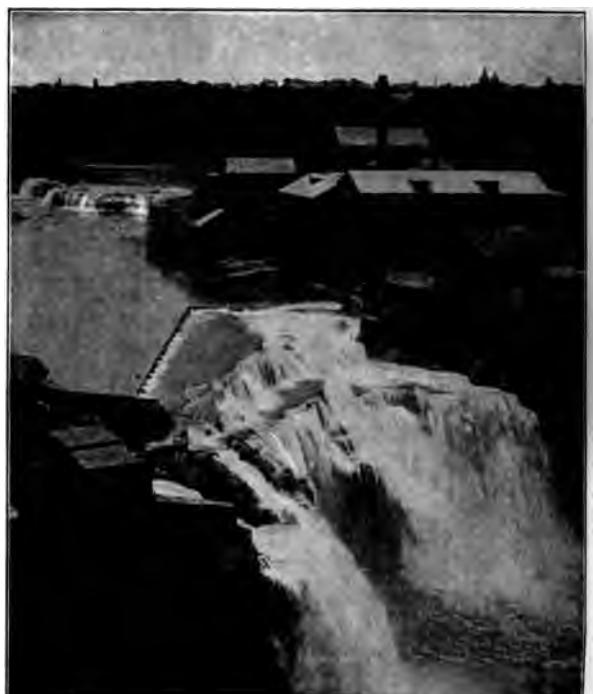


FIG. 147.—Falls in the Genesee River at Rochester, used for power in the flour mills and other factories at Rochester.

respect this is not an advantage, for vessels cannot go far upstream; but it is a great advantage for manufacturing.

On account of this water power, manufacturing developed very early here. The principal rivers used are the Connecticut, the Merrimac, and the three largest rivers in Maine. Trace the course of each of these five from source to mouth. Make a drawing of New England, put-

Sugar cane can be grown only in a warm climate and in fertile soil. The district most noted for its production is the delta of the Mississippi River in southern Louisiana; but it is also raised in Texas, Alabama, and other Southern States.

now raises even more than Virginia, and these two states together produce more than one half of the entire amount grown in our country. Yet tobacco raising is an important industry in nearly every one of the Southern States,



FIG. 157.—Workmen cutting the sugar cane on a sugar plantation in Louisiana.

Rice is the third of our crops raised only in the Southern States. Like sugar cane, this plant requires a warm climate (3) **Rice** and fertile soil. In addition, it needs a great amount of moisture, and the fields must be flooded a part of the time.

Until quite recently rice has been grown only on the low, wet coastal plains. Now, however, it is produced in higher lands in Louisiana, Texas, and other states. A few years ago these lands were altogether too dry for rice, but now they are flooded by means of irrigation. The amount of rice raised in the Southern States has thus been greatly increased. Most of it is produced in Louisiana and South Carolina.

When white men first came to America, they found the Indians smoking a weed called *tobacco*.

Tobacco The white men soon learned the habit from the Indians, and introduced it into Europe, so that a great demand for tobacco soon arose. From that time on, one of the principal crops of Virginia has been tobacco. Kentucky

and some is raised in the Northern States, even as far north as the Connecticut Valley (p. 109).

Besides the crops that have been named, almost all the farm products common to other parts of the country are raised in the South. For instance, great amounts of corn, wheat, and oats are grown, as well as fruits and vegetables.

Truck farming and gardening are also profitable industries. In the warm South, fruits and vegetables ripen earlier than in the North, and these early products can be sent North for sale long before the season for them there. There is so great a demand for these early fruits and vegetables, that gardening has rapidly developed in recent years. Whole train loads of tomatoes, strawberries, peaches, green peas, potatoes, and other fruits and vegetables are sent to Northern cities during early spring and summer.

In the most southerly part of this group, especially in Florida, fruits that require an almost tropical climate are grown. Among

these are the orange (Fig. 158), lemon, and grapefruit; and in southern Florida, the pineapple, cocoanut, and banana.



FIG. 158.—An orange tree, loaded with fruit, in a Florida orange grove.

The South is a wonderful farming country, and many products besides those mentioned

Live stock, such as cattle, sheep, horses, mules, and hogs are raised on the plantations in all the states, while the dry plains of western Texas are given up almost wholly to grazing. The grass there furnishes excellent feed for cattle, horses, and sheep, and the work of raising these animals is one of the leading industries of the state. The land over which a man's cattle or sheep roam is called a *ranch* (Fig. 159), rather than a farm or a plantation, and the business of raising them is known as *ranching*.

If you look on the map, you will see few names of towns or cities in western Texas. The reason for this is that it takes only a small number of people to carry on ranching, since a few men can look after several thousand cattle, horses, or sheep. Great numbers of cattle are sent eastward by rail, from FORT WORTH, to be used as food.

Figure 160 shows how extensive the forests are in the Southern States. Not



FIG. 159.—Cattle grazing on the broad plains of western Texas.

are raised there. For instance, tea plantations have been started, quantities of peanuts are grown, and groves of pecan nuts are planted and cared for like orchards.

all the land marked as forest on this map is covered with woods, to be Lumbering sure, for, as we have just seen, farming



149.—The broad and deep Hudson River as seen from West Point.

Hudson as far as the mouth of the Connecticut River (Fig. 150).

wide mouths of these rivers make good harbors, as is proved by the cities there. Name and locate some of these cities.

need of more waterways into the interior very early to the digging of canals. Some have been built, the longest and most important of which is the Erie Canal (Fig. 140) running from the Hudson River, near Troy and Albany, to Buffalo on Lake Erie. Measure it. This canal is especially important, as it connects the Great Lakes with the waterway of the Hudson River. On that account it has been a great highway of commerce. Name several cities along its course.

About the time the Erie Canal was finished, the locomotive was invented, and railroads began to be built. After that, there was no pressing need for more canals, since railroads could take their place.

3. Railroads

Railroads extend from north to south through these states; but most of the great railroads run from the coast westward, toward the interior of the country. The Appalachian Mountains have been a great hindrance in building them. Why?

Yet several fine roads now cross these mountains (Fig. 151). One of the first was the New York Central, running from New York City to Buffalo. It follows the Hudson River to Albany, then takes the same course westward that the Erie Canal does. All the important cities of these states are now connected by rail.

The half-dozen occupations thus far named could not be carried on, of course, without a large amount of buying and

Why trade is especially important



151.—A broad horseshoe curve where the Pennsylvania Railroad ascends the steep grades in crossing the Appalachians.

selling, or *trade*. This is the final great occupation that has brought so many people together in these states.

The 26,000,000 inhabitants living here produce so many things, and need so many others, that there is a very large amount of trade. In addition, there are many more millions living to the west of these states. Across the oceans are Europe, Africa, Asia, Australia, and South America, where hundreds of millions of other people live. The people in all parts of the

the coast. The products of the country west of them, and the ease Great centers of manufacture and commerce with which goods can be carried back and forth, have had much to do with the size of such cities

GREATER NEW YORK is the largest of all these cities; in fact, London is the only city in the world that is larger. New York, which includes BROOKLYN as a part



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FIG. 152.—A view of lower New York, showing the lofty buildings, or "sky scrapers."

United States have goods to sell to the inhabitants of these continents across the oceans; and these foreign countries have things to sell us.

The harbors of the Northeastern States are used for a large part of this trade between the United States and foreign lands. This *foreign commerce* keeps scores of thousands of men and women busy all the time, mainly in the large cities, such as New York, Philadelphia, and Boston.

The largest cities have naturally grown up around the excellent harbors along

of it, contains nearly five million persons. Across the Hudson from it, in New Jersey, but using the same harbor, are JERSEY CITY, NEWARK, PATERSON, and several other cities.

The largest vessels from all parts of the world can enter New York harbor. Also, goods can be shipped by water along the Hudson River, the Erie Canal, and the Great Lakes, all the way to Duluth at the western end of Lake Superior (Fig. 136). About how far is this? In

addition, railroads run in all directions, so that transportation is well provided for.

Because of these unusual advantages for shipping, thousands of factories have been located in or near New York, and in them are made almost all kinds of manufactured articles that people want. Probably the greatest manufacturing industry is the making of clothing. The refining of petroleum is one of the important industries in Jersey City and in Brooklyn. Paterson is noted for the manufacture of silk. Large quantities of iron and steel goods are also made in this neighborhood.

the third city in size in the country. As is the case near New York, there are other large cities near by. Among these are CAMDEN and TRENTON in New Jersey, the latter being noted for its manufacture of fine pottery.

The products of Pennsylvania and New Jersey, such as fruit, lumber, iron, coal, and oil, together with the manufacture of iron and other goods, have helped make Philadelphia a great city. This port, like New York, has much foreign commerce, with steamship lines to all parts of the world, and railroads connecting it with the interior.



FIG. 153.—A part of Boston, with its fine harbor beyond.

Merchants from all parts of the United States come to New York to purchase goods for their stores. Many great buildings in the city are given up entirely to this kind of trade, called the *wholesale trade*. A number of the buildings in New York are as many as thirty stories in height, some are forty or more, and one, including its tower, is fifty stories high. It is no wonder that New York City is called the *metropolis*, or great city, of the United States.

Only ninety miles southwest of New ^{2. Philadelphia} York is PHILADELPHIA, situated as far up the Delaware River as large vessels can go. It is

The largest city northeast of New York is BOSTON, which is the fifth in size in the United States. It ^{3. Boston and other New England ports} has an excellent harbor (Fig. 153), and although there is no water route toward the west, numerous railroads lead from it to the north, west, and southwest. Boston has a large amount of manufacturing, and ranks next to New York in foreign commerce. Near by are several important manufacturing cities, such as CAMBRIDGE, and others whose names cannot be placed on so small a map.

NEW HAVEN in Connecticut, **PROVIDENCE** in Rhode Island, and **PORTLAND** in Maine are the other principal coast cities in New England. Locate each.

1. Name the six New England States. Name the three Middle Atlantic States included in this group. 2. What can you say about the total area of these states? About the area of Rhode Island? Of Maine? Of New York? 3. What do you know about the population of these states? 4. Name the principal occupations. 5. Why is farming not especially prominent? 6. What are the chief kinds of farming? Why? 7. Name some of the most fertile sections. What are their products? 8. Tell about the lumbering. 9. The fishing. 10. Name the chief mineral products of these states. 11. State the principal facts about the quarrying. 12. About salt. 13. Oil and gas. 14. Iron ore. 15. Coal. 16. What about the manufacturing in Pennsylvania, New Jersey, and New York? 17. In New England? 18. What changes have there been in methods of manufacture? 19. What can you say about the number and excellence of the harbors? 20. About the rivers and canals? 21. The railroads? 22. Why is trade especially prominent in these states? 23. State the principal facts about Greater New York and vicinity. 24. Philadelphia and vicinity. 25. Boston. 26. Name and locate other New England ports. 27. Which of the seven great occupations are especially prominent in the Northeastern States? Give reasons. 28. What reasons can you now give for the dense population of these states? 29. Name the principal seaports, and locate each. 30. Locate several other important cities in these states.

1. Make a drawing of New York State, showing the Hudson River and the Erie Canal. 2. How does it happen that New York City and Buffalo, at opposite ends of the state, are such large cities? 3. What cities do you find on the Erie Canal? Why so many? Put their names on your map. 4. How can a canal be built where land is not level? 5. Make drawings of some of the more common fish. Fill in the colors. 6. Visit a fish store to see the kinds of fish mentioned in the text. 7. Make a collection, for the school, of some marble, granite, slate, hard coal, soft

Review
Questions

coal, and iron ore. 8. What names beginninf with *New* do you find on the map? How can you explain such frequent use of this word? 9. Write the abbreviation for each of the states in this group. 10. Draw an outline map of the Northeastern States, putting in the rivers and cities mentioned. 11. Name and locate the capital of each state in this group.

V. THE SOUTHERN STATES¹

1. In which states of this group are there mountains? 2. What are the names of the mountains? 3. Where are the ~~Map study~~ plains (Fig. 137)? 4. Which is the largest river? 5. Locate Chesapeake Bay. What rivers enter it? 6. What large cities are on it? 7. How is Texas separated from Mexico? 8. Which is the largest state? Which the smallest? 9. Which state is largely a peninsula? 10. How far distant are the southern points of Florida and Texas from the Tropic of Cancer? What does this suggest about the climate of the Southern States? 11. What water lies east and south of these states?

These states are not always grouped together as Southern States. Sometime Kentucky is considered one ~~States included here~~ of the Central States, which is the next group to be studied; and Delaware, Maryland, Virginia, and West Virginia are often classed with New York, New Jersey, and Pennsylvania, as the Middle Atlantic States. Name the sixteen states of this Southern group.

These sixteen states have more than five times the area of the Northeastern States; and Texas alone, ~~Area and pop-~~ the largest state in the ~~Union~~ Union, is larger than the entire group of Northeastern States.

¹ Any division of the country into groups of states is unnatural, because state boundaries rarely follow natural lines. This present grouping is adopted in this first book because it makes it possible to study related industries more effectively. It is, as a matter of fact, more natural to include these states in one group than to follow the usual grouping of Middle Atlantic States, etc.

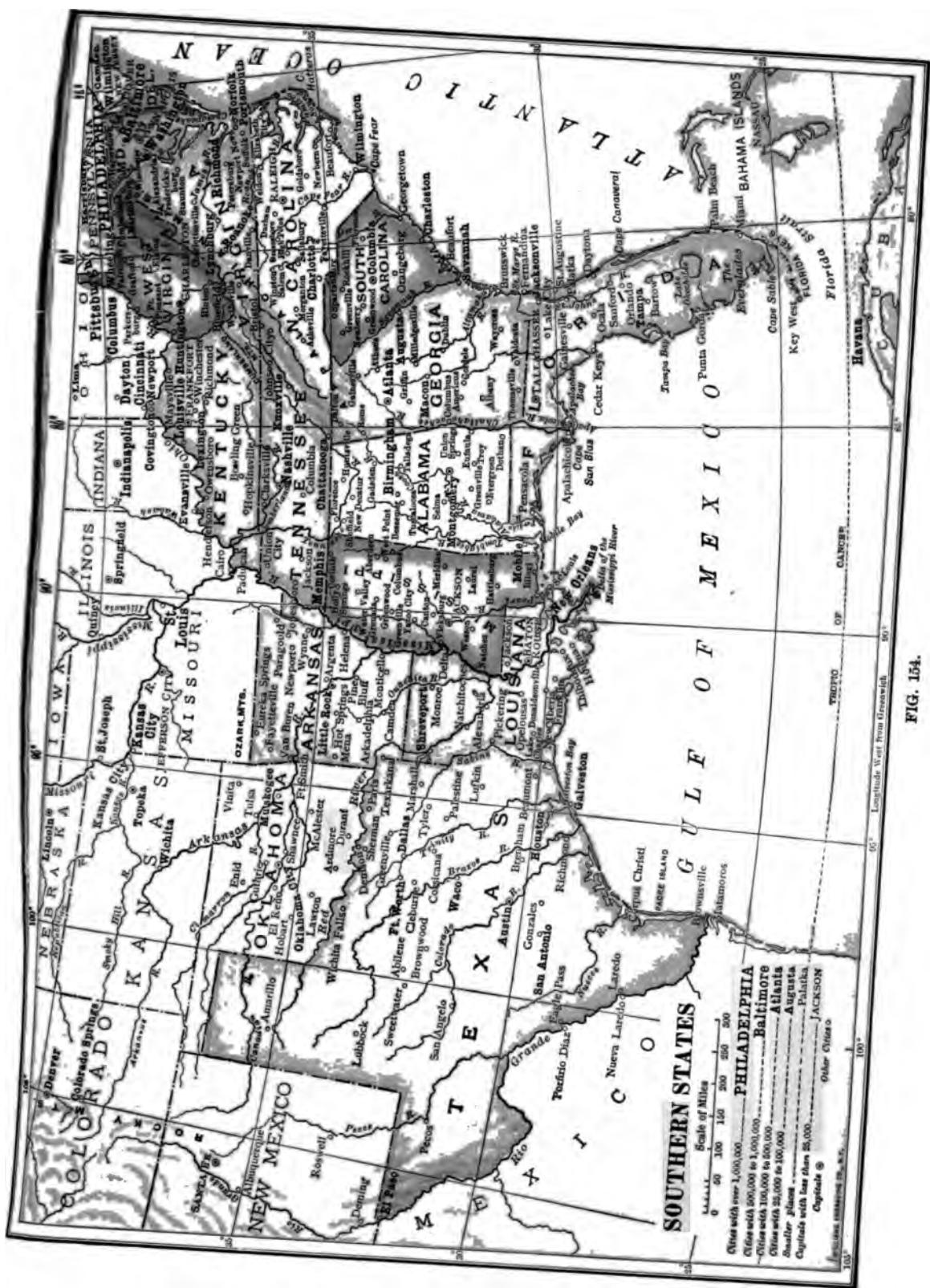


FIG. 154.



The population of all the Southern States together is only three million more than that of the Northeastern States. This fact suggests that the chief occupations may be different from those in the states already studied. Let us see to what extent this is true.

The rest of this great section, however, consists mainly of plains. From western Texas to the Appalachian Mountains there is little else than fairly level land (Fig. 155). Along almost the entire coast there is a broad strip of low, level land known as the *coastal plains*. Between



FIG. 155.—Much of the South is level land like that in the picture, which shows an immense peach orchard on the plains of Florida.

We have seen that much of the land in the Northeastern States is so mountainous or hilly that it is not well suited to farming. The ^{1. Amount of} _{level land} Appalachian Mountains extend also across some of the Southern States, as you can see from the map. Name the states that these mountains cross. There are also low mountains in western Arkansas and in eastern Oklahoma; and a portion of the Rocky Mountains extends across western Texas. These mountainous parts, of course, are little suited to farming, except in the valleys.

this and the Appalachian Mountains there is a very fertile, rolling country called the *Piedmont* (meaning "foot of the mountain") region.

Higher plains are found in Texas and in some parts of the Mississippi Valley. Along the rivers, especially the Mississippi, there are broad flood plains protected from the river floods by banks, called *levees*. Notice especially the Mississippi delta. Can you explain why the land at this point extends so far into the Gulf of Mexico?

In some parts of these plains the soil is too sandy for farming, being fit only

for the growth of timber; but in most sections the soil is very fertile.

The climate is much more favorable to farming than that of New England. There is more rain in nearly all parts except in western Texas, where the chief industry is grazing.

The temperature is especially favorable, for the winters are not severe, and the summers are longer than in the Northeastern States. Therefore, many kinds of plants can be grown here that cannot live in the North; and it is easier to keep cattle and other live stock. They can be left out of doors in winter, and can find grass to eat when the ground in the North is frozen and covered with snow.

On account of the climate, three crops can be raised

3. The three special crops of the South
(1) Cotton

here that are not produced in the North. The most important of

these is *cotton*. Every person has use for cotton; for calico dresses, under-clothing, thread, and, indeed, hundreds of things are made of it. More than one half of all the cotton raised in the world is grown in our Southern States. The large farms on which it is cultivated are called *plantations* (Fig. 156), and often contain hundreds of acres. It is the principal crop all the way from North Carolina to central Texas.

The cotton plant grows to a height of from two to four feet. It has a blossom that is at first white, and then turns pink. Later it develops into a small pod which enlarges until it ripens and bursts into a white ball, called a *cotton boll*. This looks somewhat like a milk-

weed pod, after it has burst open, and is a beautiful sight when seen in thousands on the plantations.

The fiber, or cotton, in the bolls is picked in the autumn by men, women, and children. After picking, it is placed in a machine, the *cotton gin*, to remove the seeds. The cotton is then pressed into large bales, like those shown in Fig. 157. About one sixth of it is manufactured in the South, and the remainder is shipped to England, to England, and to other European countries to be manufactured.

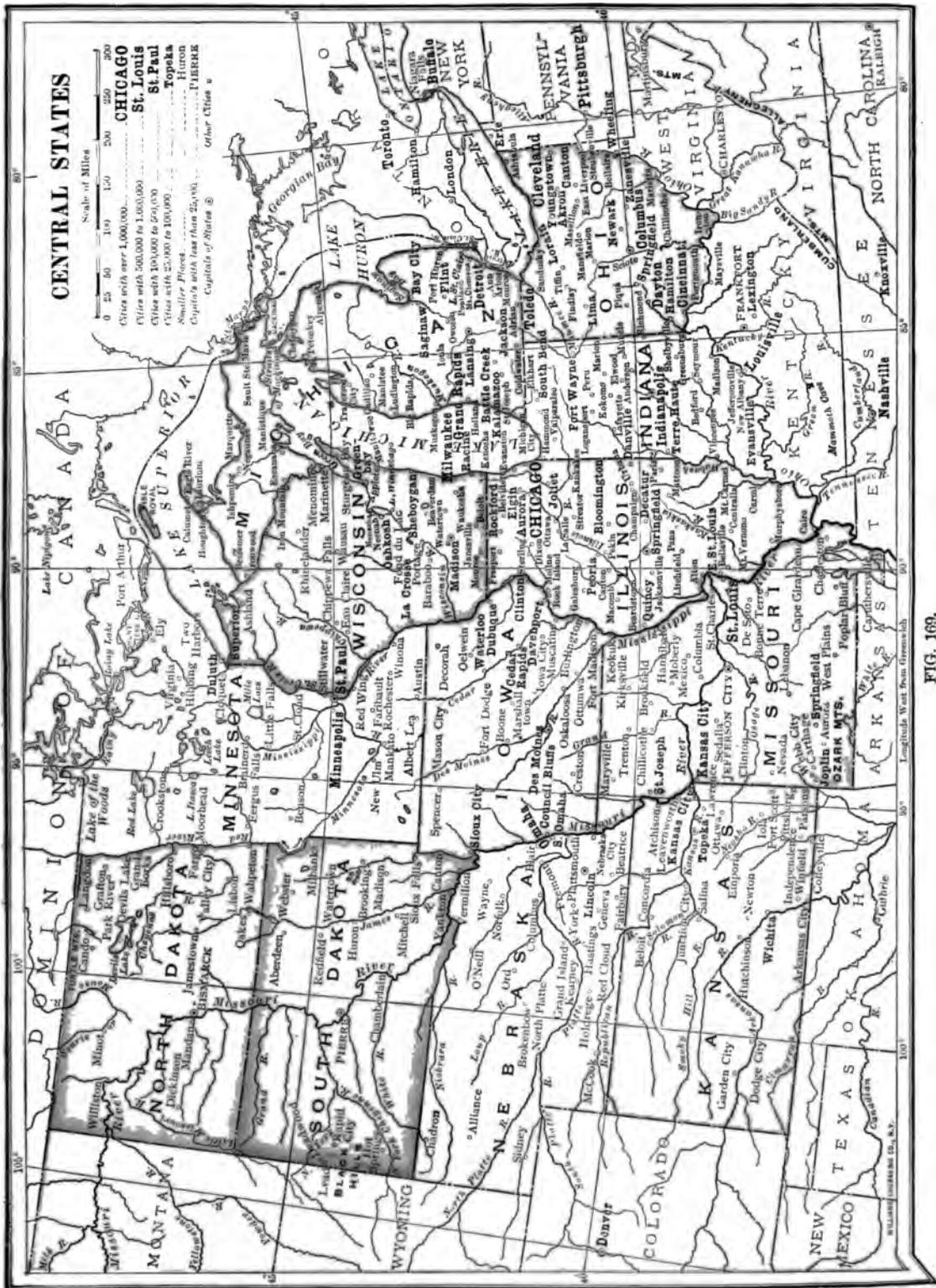
Cotton is the most valuable product in the South. The amount



FIG. 156. — Picking cotton on a plantation in Arkansas.

raised in one year is usually worth more than all the gold and silver mined in the whole world in a year. It is worth as much, or more, than all the wheat produced in the United States in a year. Even if there were no cotton crop, cotton alone would make the Southern States of great importance.

A second crop that is produced elsewhere in the United States and in the South is *sugar cane*. It grows in tall stalks (Fig. 157), that resemble corn and is more valuable on account of the sweet juice they contain. This juice is pressed and made into sugar and molasses.



these are the orange (Fig. 158), lemon, and grapefruit; and in southern Florida, the pineapple, cocoanut, and banana.



FIG. 158.—An orange tree, loaded with fruit, in a Florida orange grove.

The South is a wonderful farming country, and many products besides those mentioned

Live stock, such as cattle, sheep, horses, mules, and hogs are raised on the plantations in all the states, while the dry plains of western Texas are given up almost wholly to grazing. The grass there furnishes excellent feed for cattle, horses, and sheep, and the work of raising these animals is one of the leading industries of the state. The land over which a man's cattle or sheep roam is called a *ranch* (Fig. 159), rather than a farm or a plantation, and the business of raising them is known as *ranching*.

If you look on the map, you will see few names of towns or cities in western Texas. The reason for this is that it takes only a small number of people to carry on ranching, since a few men can look after several thousand cattle, horses, or sheep. Great numbers of cattle are sent eastward by rail, from FORT WORTH, to be used as food.

Figure 160 shows how extensive the forests are in the Southern States. Not



FIG. 159.—Cattle grazing on the broad plains of western Texas.

are raised there. For instance, tea plantations have been started, quantities of peanuts are grown, and groves of pecan nuts are planted and cared for like orchards.

all the land marked as forest on this map is covered with woods, to be Lumbering sure, for, as we have just seen, farming

is a very great industry. The map is intended merely to show that *much timber* grows in all these states. As a matter of fact, about twice as much land is covered with forest as is taken up by farms.

fenced in by stakes, and are owned and cared for as carefully as ordinary farms are. One of the best oyster sections in the country is Chesapeake Bay, with its many shallow branches; but oysters are raised as far north as Cape Cod, in Mass., and as far south as the Rio Grande.

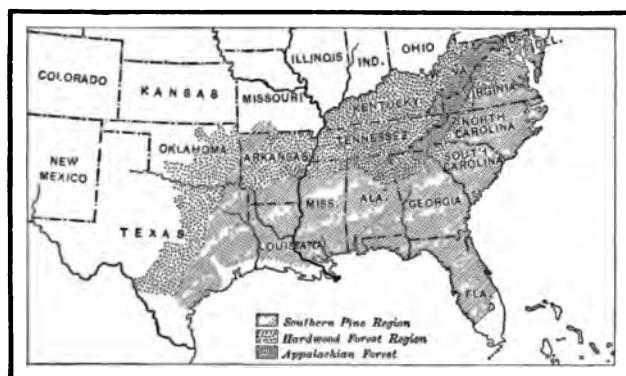


FIG. 160.—The forest regions of the Southern States.

There is a great amount of hard pine on the coastal plains, and on the higher lands such hardwoods as oak and hickory thrive. In which states are these higher lands found? Name some of the uses to which these different kinds of wood are put. Nearly one half of all the timber now cut in the United States comes from the South. From this you can see that lumbering is one of the prominent industries here.

There is much fishing here, as in New England, but the kinds of fish are different. Cod and halibut are not found, because they live only in the colder waters. There are, however, oysters, shad, bluefish, and a number of other kinds of food fish.

Oysters thrive so well in these warm Southern waters, and they are so highly prized for food, that the culture of oysters is given careful attention. There are many "oyster farms"; that is, patches of shallow water in which young oysters are placed, to be gathered when they have grown to full size. These "farms" are

From what has been said, you can see that *farming* and *lumbering* are among the ^{Growth of} leading industries of the South the South. Yet neither of these industries requires a dense population, or causes the growth of large cities. From this it is clear why people are more scattered in the Southern than in the Northeastern States.

Of late years, however, other industries have been rapidly developing in the South; the population has been increasing very fast, and seems likely to increase much more in the near future.

Mining is one of the industries that have been rapidly developing, and many valuable minerals are found. Among these minerals, the ^{Mining} _{1. Coal} most important is soft, or bituminous coal, which is mined in large quantities. The states where this coal is found are shown on the map (Fig. 161). What are their names? Note also what states have lignite, or brown coal. This is not so good as the bituminous coal, but is of considerable value.

Iron ore is mined in several of the Southern States, especially Tennessee and Alabama; but Alabama ^{2. Iron ore} supplies nearly as much as all the others together. Only two other states in the country, Minnesota and Michigan, produce more iron ore than Alabama.

Both petroleum and natural gas have been found in several of these states. **3. Oil and natural gas** Indeed, the oil fields of Texas, Oklahoma, and West Virginia are among the most remarkable in the country, and millions of barrels of oil are now produced by that section every year.

More petroleum comes from Oklahoma than from any other state in the Union, except California. West Virginia produces less than one fourth as much. But its oil is of finer quality, and hence brings a higher price than that from Oklahoma.

There are deposits of building stones, including granite, sandstone, limestone, and marble; **4. Other mineral products** important deposits of clay for bricks and pottery; and of limestone for Portland cement. Besides these, some gold and silver, as well as other metals, are produced. The South, therefore, has a great deal of mineral wealth.

There are so many valuable raw products in the South, that there are great

More important still, there is an abundance of coal for power. **1. Conditions favorable to manufacturing** Besides that, there are many rivers and mountain streams that can furnish water power, as in New-

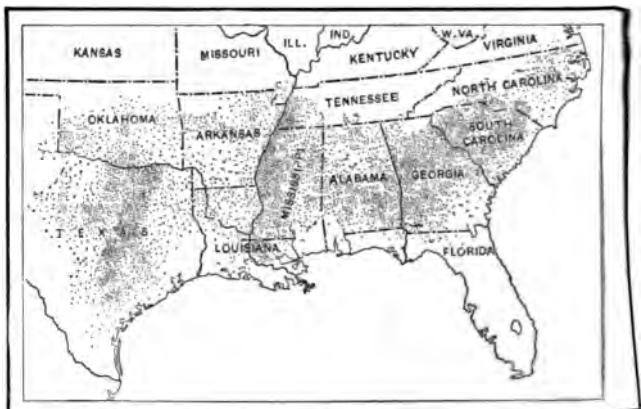


FIG. 162.—The cotton belt. Each dot represents 1,000,000 pounds of cotton.

England. In many places, this water power is used to run factories. Much of it is made to produce electricity, as at Niagara Falls in New York. The electricity is then conducted by wires to factories in all directions.

For a long time most of the manufacturing in the United States was done in **2. Cotton manufacturing** New England. Great quantities of cotton, and other raw products, were sent there from the South and West; then some of the finished articles were shipped back.

Until very recently many persons believed that the South could not compete with New England in the manufacture of cotton goods. To be sure, it seemed strange that the place where the cotton was grown should not be the place where it was made into cloth. Yet it was supposed that the Southern climate

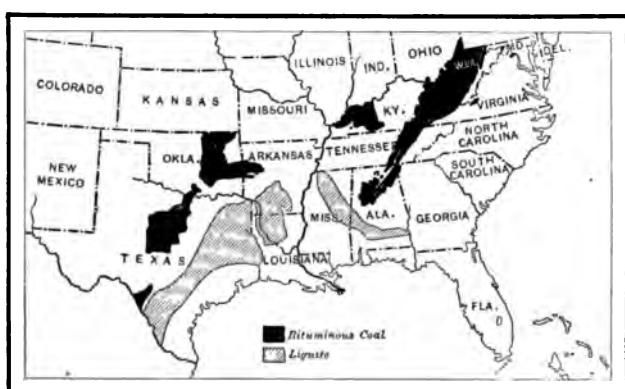


FIG. 161.—The coal fields of the Southern States.

opportunities for manufacturing. Among **Manufacturing** these products are cotton, sugar cane, corn, wheat, cattle, sheep, lumber, and iron ore, from each of which useful articles can be made.

or else in the farming country farther east. They are shipped to the meat-packing houses of CHICAGO, KANSAS CITY, OMAHA, or other cities to be slaughtered.

A large portion of the Central States is not noted for its lumber: first, because much of the land **Lumbering** never had any forest; and second, because much land that was once wooded has now been cleared. The timber cut from it has been used for building, or other purposes, and the cleared sections have become productive farm land.

The largest area that was covered with timber, when first discovered, was

Having no seacoast, these states do not take part in ocean fishing, but there is fishing in many of the rivers, and several kinds of food fish are found in the Great Lakes. There is, therefore, a small amount of fishing in the Central States, but this is the least important of the great industries.

Some of the most useful minerals are found here in large quantities, and mining is second in importance to farming among the industries connected with raw products.

The country near the western end of Lake Superior, in Michigan, Wisconsin, and Minnesota, is a very rich mineral region. In

^{1. Copper and iron ore}
this district, on the peninsula that extends from Michigan into Lake Superior, there are immense deposits of pure copper. This is one of the leading copper-producing sections in the world.

Even far more valuable than the copper is the iron which comes from the Lake Superior district. In some places it is quarried as stone is; in others it is dug out with large steam shovels, as sand



FIG. 172.—A sawmill in Wisconsin. The logs are floated from the forest by the river, and sawed into lumber in the mill.

in Michigan, Wisconsin, and Minnesota, near the Great Lakes. Here the land is more hilly than in most parts of the Central States, and it was covered with dense forests. Although much of the timber has been removed (Fig. 172), lumbering is still carried on in this section, as well as in some other parts of the Central States. Lumbering is, however, a far less important industry than agriculture.

may be taken from a sand bank; in still other places it is mined from underground (Fig. 173). No other part of the world produces so great an amount of iron ore as the Lake Superior district.

You have already learned that coal is necessary in order to get the iron from the ore. There is no coal ^{2. Coal} near the Lake Superior mines, but there is an abundance of bituminous coal in the states farther south.

wheat into flour; and tobacco into cigars and other forms for use. There is now almost every kind of manufacturing in the South.

The irregular coast line of parts of the Southern States shows that there are many harbors there. Good harbors are especially numerous in the northern part. Observe how far the waters of Chesapeake and Delaware bays extend into the land. The cities of BALTIMORE and WILMINGTON, on these bays, have much the same advantages for shipping goods that Philadelphia has. NORFOLK and RICHMOND, in Virginia, are also good shipping points.

Farther south, although the water in some of the bays is shallow, and sand bars are common, there are many good harbors; and the United States government is spending much money in deepening and improving others, so that the largest ships may enter them.

The commerce of the states bordering the Gulf of Mexico is greatly aided by the Mississippi River. This

mighty river, together with its tributaries, drains a vast area, inhabited by millions of people. Name the principal tributaries, and trace them to their sources. On Figure 213 note how far up these rivers boats can go. Since transportation of goods is cheapest by water, a large amount of freight is sent up and down these waterways (Fig. 164). No wonder, therefore, that the United States government is spending large sums of money improving them.

In addition to the waterways, there

are railways connecting all important points in these states, and reaching out to all parts of our country. These carry great quantities of freight, as well as many passengers.

The principal cities in the South, as in the North, are those that have grown up at the best shipping points, or at commerce points especially favorable to manufacturing.

BALTIMORE, the largest of all, is the seventh city in size in the United States, having over half a million inhabitants. It has an excellent harbor, far inland, in the fertile state of Maryland, near the head of Chesapeake Bay. Coal and iron can easily reach it from the Appalachian Mountain region; and, like New York and Philadelphia, it has a large amount of manufacturing and commerce. It is further noted as a center of oyster fishing and shipping.



FIG. 164.—Even the small streams and canals are used for shipping freight. Here, for example, are six thousand bales of cotton on a barge in the Houston Canal, in Texas, bound for the seacoast, to be placed on vessels for shipment to England.

RICHMOND, the capital and largest city of Virginia, is located on the James River. It is a

Driving center, noted especially as a tobacco market. NORFOLK, at the mouth of Chesapeake Bay, is a shipping point of growing importance.

WILMINGTON, on the Delaware River, is the largest city in Delaware. Like

Quantities of cotton, cotton-seed oil, sugar, molasses, and rice are shipped from here. Manufactured goods, such as cloth and shoes; and foods, such as meat, wheat, and corn, are collected here and then distributed in all directions. Since New

Orleans is so good a shipping point, it has, of course, much manufacturing.

Far up on the Ohio River is LOUISVILLE, the fourth city in size in the Southern States, and the largest in Kentucky. It is a leading center for tobacco manufacture and trade, as well as for the manufacture of iron goods and other articles.

On the Mississippi River, midway between New Orleans and Louisville, is



FIG. 165.—Loading Mississippi River boats from the levee.

Camden, it should be associated with Philadelphia as an important manufacturing center.

Among Southern cities, the one next to Baltimore in size is NEW ORLEANS, on the Mississippi River and its tributaries about one hundred miles above its mouth. Large ocean vessels can reach this port, and river boats (Fig. 165) can travel from it as far up as Pittsburgh on the Ohio River, and a great distance, also, up the Mississippi and Missouri rivers. On Figure 154 measure the distance from New Orleans to Pittsburgh.



FIG. 166.—A view on the water front at Savannah, where much lumber is shipped.

MEMPHIS, in Tennessee, another of the large cities in these states. It is in the midst of the cotton and hardwood sections,

and is noted for its cotton and lumber trade.

NASHVILLE, on the Cumberland River, is the capital of Tennessee. It is a manufacturing and trade center, and is distinguished for its fine schools and colleges.

Find **BATON ROUGE**, in Louisiana; **VICKSBURG** and **JACKSON**, in Mississippi; **LITTLE ROCK**, in Arkansas; and **GUTHRIE**, in Oklahoma. These are all centers of trade in the states where they are situated. Which of them are state capitals?

Several well-known cities besides those already mentioned are found along the coast east of the Mississippi River. The most important are **SAVANNAH**, Georgia (Fig. 166), and **MOBILE**, Alabama, both of which handle much cotton. Find **WILMINGTON**, North Carolina; also **CHARLESTON** and **JACKSONVILLE** farther south. The last is one of the chief shipping ports for Florida fruit. **TAMPA** and **PENSACOLA**, on the west side of Florida, ship much lumber. Tampa also has important trade with the West Indies.

Another leading city of the South, ranking next to Louisville in size, is **ATLANTA**, near the southern end of the Appalachian Mountains. It is a great railway center and is in the midst of a country of rich resources. Cotton is abundant, there is plenty of lumber, and both coal and iron ore are not far distant. Atlanta has, therefore, become a manufacturing center.

BIRMINGHAM as a manufacturing center has already been mentioned, as have **CHATTANOOGA** and **KNOXVILLE**. There are other important inland manufacturing cities in the South that you will learn about later.

Florida deserves special mention, because it has so many small towns and cities that are noted as winter resorts. The mild winter climate

attracts thousands of Northern visitors, for it never very cold, and flowers blossom all winter. **MIAMI**, **JACKSONVILLE**, and **ST. AUGUSTINE** are among the best known of these resorts. **KEY WEST** and **TAMPA**, also winter resorts, are extensively engaged in tobacco manufacturing.

GALVESTON ranks second in importance among the seaports of the United States. Baltimore and New Orleans are also important shipping ports. Galveston is the outlet for a great amount of cotton and other goods, produced to the north and west of it. **HOUSTON**, **DALLAS**, **FORT WORTH**, **SAN ANTONIO**, and **AUSTIN** are other leading cities of Texas.

Oklahoma, one of the newest of our states, includes what was formerly called Indian Territory, a region reserved as the home of some Indian tribes. It is a state of splendid resources, and as soon as the government opened the to settlement by white men, large numbers of settlers went there. Within a few years so many people have made their homes in Oklahoma, it has been changed from a territory to a state. It already has four thriving cities,—Oklahoma City, the capital, Muskogee, Shawnee, and Guthrie,—and there are other rapidly growing cities.

WASHINGTON, on the Potomac River, not far from Baltimore, is the third largest city in the South; but it is unlike any of the others that have been mentioned. While manufacturing and commerce are, as a rule, the occupations that make great cities, Washington is noted for neither of these.

The importance of Washington is due to the fact that it is the capital of the United States. It is a great business merely to carry on the government of our country, and this is done in Washington. The main buildings there are government buildings, not factories or stores. A large number of the people

5. Other Cities
west of the Mississippi River

6. Washington
in the District of Columbia

route, goods may be shipped from Chicago to the ocean along the St. Lawrence River. The Mississippi River furnishes another water highway to the ocean.

Lake Michigan extends so far south that the railways running between the Northwestern and the Northeastern States swing around the lake at this point. This makes Chicago one of the leading railway centers in the country.

Chicago stock yards (Fig. 176). The business of packing, canning, and shipping meat employs thousands of workmen, and many others are employed in tanning the hides to make leather. Much of the tanning is done in Milwaukee.

Much of the wheat from the farming country is sent to Chicago and Milwaukee, either to be shipped farther by boat, or to be ground into flour for



FIG. 176.—A view of the stock yards at Chicago, in which vast quantities of meat and other animal products are prepared every day.

Thus it is well provided with means for transportation both by rail and by water.

Not far north of Chicago, on the western shore of Lake Michigan, is MILWAUKEE, which shares some of the advantages of Chicago. It is much smaller, to be sure, but is larger than New Orleans.

Quantities of raw products from the surrounding country are sent to these two cities. For example, Chicago is the leading meat market in the world. Cattle, sheep, and hogs from the western plains, as well as from the farms of the Central States, are shipped to the

bread. The latter city has long been noted for its great flour mills and breweries. Another important product shipped to these cities is corn, some to be ground into corn meal or made into hominy, starch, cereals, and other things; some to be shipped East. So much corn and wheat are carried to Chicago that it is a noted grain as well as meat market.

Not far from Chicago are extensive coal fields, and since this city has no water power for manufacturing, coal is sent to it, in large quantities, for use in the factories. The ease with which iron ore from the Lake Superior mines can

VI. THE CENTRAL STATES

1. Name the states in this group. 2. Which of them border on the Great Lakes? 3. Name **Map study** the Great Lakes. 4. Which of these lakes is highest above the level of the ocean? How can you tell? How does the name of this lake suggest that it lies highest? 5. By what river do the waters of these lakes reach the ocean (Fig. 133)? 6. Remembering what was said about the Erie Canal (p. 117), show how goods can be shipped by water from Duluth and Chicago to New York City. 7. Name the three principal rivers in the Central States. Trace each. 8. Trace the divide between the Mississippi Valley and the valley of the Great Lakes. 9. Which state

than live in either the Northeastern or the Southern States. There are also many large cities, including Chicago, the second largest in the United States, and St. Louis, the fourth in size:

Let us see what has attracted so many people here, what their chief occupations are, and how these compare with the occupations in the section already studied.

Agriculture is the most important of these occupations. Indeed, **Agriculture** this is one of the best farming sections in all the world.



FIG. 168.—The deep, rich soil of the very level plain in the Red River Valley of North Dakota makes this one of the finest wheat regions in the world.

drains entirely into the Great Lakes? 10. Which states drain mainly into the Ohio River? Into the Mississippi River? Into the Missouri River? 11. Which state drains partly into the Arctic Ocean?

The area of these twelve states is somewhat smaller than that of the sixteen Southern States just **Area and population** studied, but it is over four times that of the Northeastern States.

A century ago there were scarcely any people living here, excepting Indians and a few scattered trappers. Now there are over thirty million persons, or more

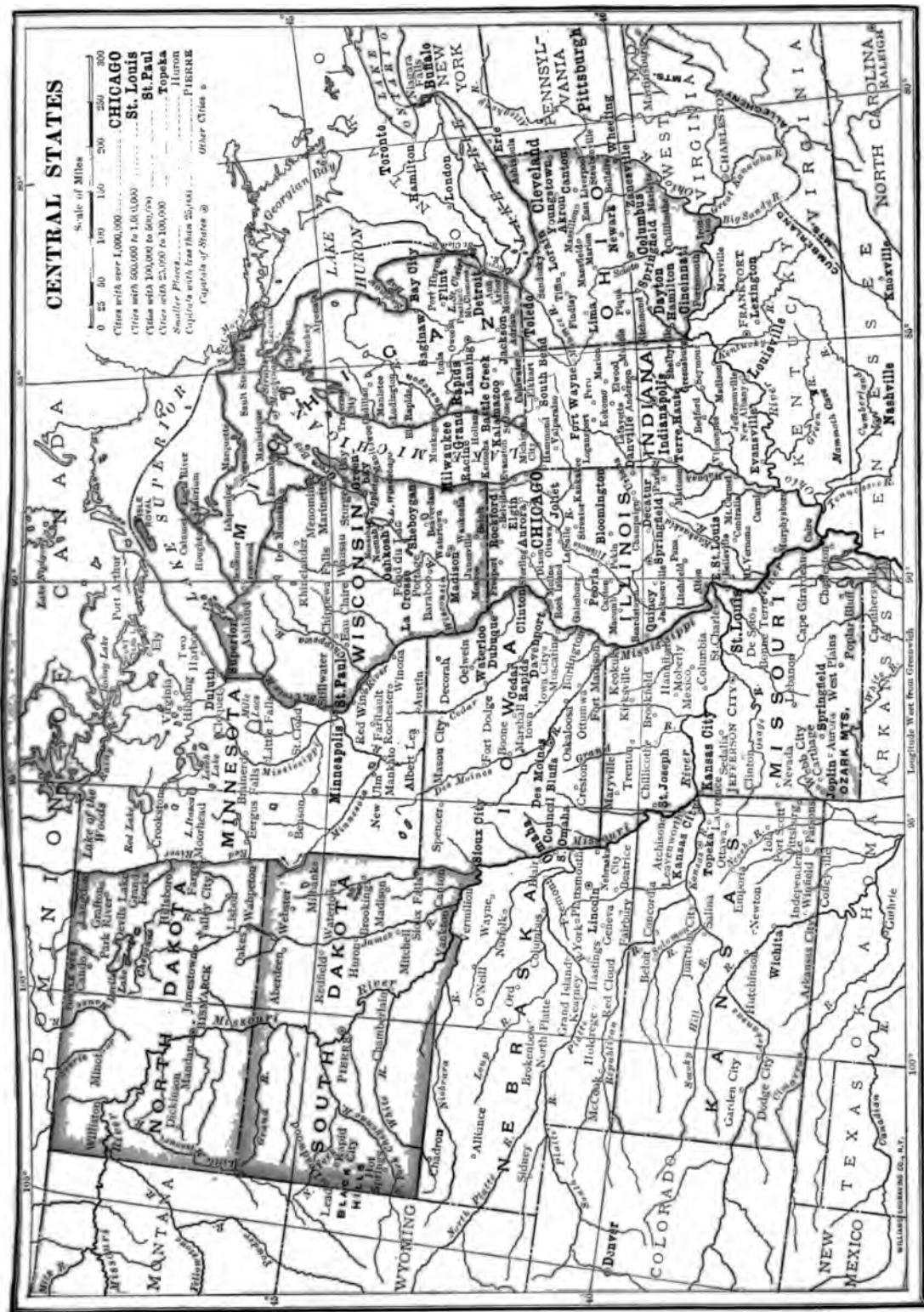
There are several reasons for this. In the first place, throughout almost the entire section the land is a level plain, or, at most, gently rolling and hilly. This is very different, as you remember, from most of the land of the Northeastern States. The level surface makes it possible to cultivate large tracts of land easily (Fig. 168), as in the Southern States.

The soil is extremely fertile, too, and unlike that in many parts of the North

1. Favorable conditions for farming

(1) *Great amount of land*

FIG. 169.





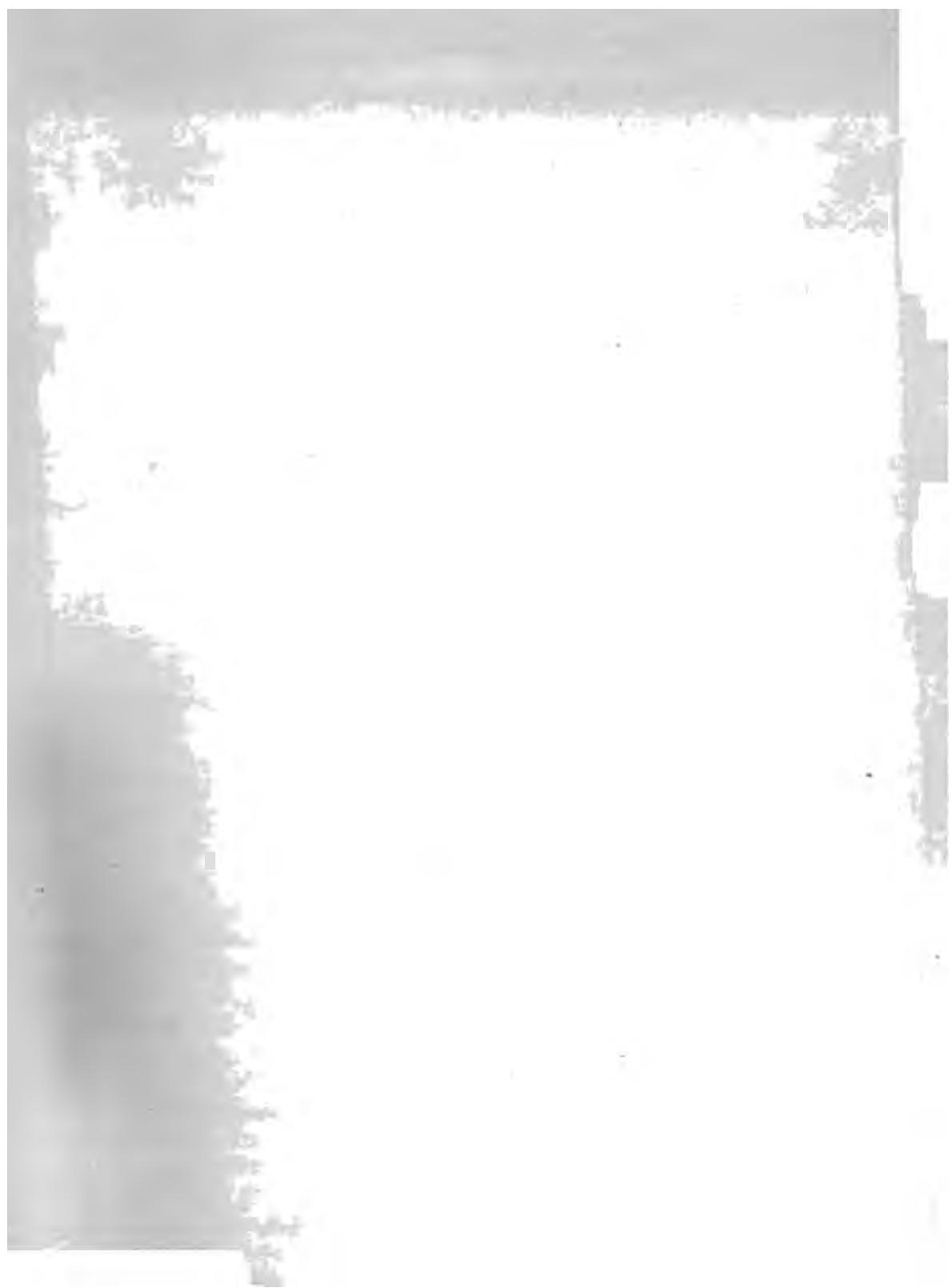




FIG. 171.—Sheep grazing in a pasture in a hilly part of the Central States, in Missouri.

corn-producing section in the world. Corn requires longer and warmer summers than wheat; for this reason the principal corn belt lies a little south of the principal wheat belt, as you can see by comparing Figures 206 and 207.

Other important kinds of grain are oats, rye, and barley. It is interesting, in traveling across this vast farming country in early summer, to see the broad fields of wheat, corn, and other grains. In some sections, wheat extends as far as the eye can reach; in others, corn; and here and there oats, rye, and barley occupy a portion of the ground. These fields of grain, waving in the breeze, make a beautiful sight.

As in the other groups of states, hay is a very valuable crop, being used as feed for animals, especially (2) *Other crops* in winter. Vegetables of many kinds are raised everywhere, but in greatest amounts near the cities; small fruits, such as berries, are abundant; and vineyards and orchards of apples, pears, peaches, and other fruits are common. Among other valuable crops is the sugar beet, from which beet sugar is made; another is tobacco, which

is raised in all these states, but in greatest quantities in the southern portion.

A great amount of stock is to be seen throughout this entire region, for each farmer usually keeps a few (3) *Animals* horses, cattle, and hogs. He has chickens, also, and probably ducks, turkeys, or geese. From these facts it is plain that meat, milk, butter, cheese, eggs, and poultry are among the important farm products of this region. In some of the more hilly sections, as in parts of Ohio and Missouri, dairying and sheep raising are the principal farming occupations (Fig. 171).

In the extreme western part of the Central States, where the rainfall is light, grazing is almost the only occupation, except where irrigation is possible. This region reminds us of western Texas.

Before white men settled on these Western plains, vast herds of bison ranged over that great natural pasture; but they have now been killed, and their place is taken by cattle and sheep. These states, therefore, produce large quantities of meat, hides, and wool.

The full-grown cattle and sheep are fattened either on the irrigated farms along the streams

or else in the farming country farther east. They are shipped to the meat-packing houses of CHICAGO, KANSAS CITY, OMAHA, or other cities to be slaughtered.

A large portion of the Central States is not noted for its lumber: first, because much of the land never had any forest; and second, because much land that was wooded has now been cleared. The timber cut from it has been used for building, or other purposes, and the cleared sections have become productive farm land.

The largest area that was covered with timber, when first discovered, was



FIG. 172.—A sawmill in Wisconsin. The logs are floated from the forest by the river, and sawed into lumber in the mill.

in Michigan, Wisconsin, and Minnesota, near the Great Lakes. Here the land is more hilly than in most parts of the Central States, and it was covered with dense forests. Although much of the timber has been removed (Fig. 172), lumbering is still carried on in this section, as well as in some other parts of the Central States. Lumbering is, however, a far less important industry than agriculture.

Having no seacoast, these states do not take part in ocean fishing, but there is fishing in many of the rivers, and several kinds of food fish are found in the Great Lakes. There is, therefore, a small amount of fishing in the Central States, but this is the least important of the great industries.

Some of the most useful minerals are found here in large quantities, and mining is second in importance to farming among the industries connected with raw products.

The country near the western end of Lake Superior, in Michigan, Wisconsin, and Minnesota, is a very rich mineral region. In

^{1. Copper and iron ore}
this district, on the peninsula that extends from Michigan into Lake Superior, there are immense deposits of pure copper. This is one of the leading copper-producing sections in the world.

Even far more valuable than the copper is the iron which comes from the Lake Superior district. In some places it is quarried as stone is; in others it is dug out with large steam shovels, as sand

may be taken from a sand bank; in still other places it is mined from underground (Fig. 173). No other part of the world produces so great an amount of iron ore as the Lake Superior district.

You have already learned that coal is necessary in order to get the iron from the ore. There is no coal near the Lake Superior mines, but there is an abundance of bituminous coal in the states farther south.

This you can see by examining Figure 211. How far is it from the iron district to the nearest coal fields, as shown on this map? In which of the Central States is the coal found?

The coal of the Central States is used in smelting iron, in heating houses, and in running factories, locomotives, and steamboats. Thus the mineral fuel which lies beneath the soil of so many of these states, is one of the most valuable raw products in this section. It is especially important in Illinois, Ohio, and Indiana, although coal mining is carried on extensively in several of the other states.

After natural gas and petroleum were found in New

3. Oil and gas York and Pennsylvania, borings were made in the rocks of other states, and it was

discovered that both oil and gas were imprisoned in some of the rocks of the Mississippi Valley. Indeed, this section has become even more important than the Northeastern States in the production of these valuable substances.

Petroleum and natural gas are found in many places, and have helped greatly in the development of the region. The petroleum is refined and used as already described on page 112. The natural gas, which makes an excellent and cheap fuel, is used in cities and factories; it is often piped into the houses for lighting, and into stoves and furnaces for cooking and heating.

There is a variety of other minerals in the
4. Other minerals Central States. For instance, gold is mined in the Black Hills of western South Dakota; lead and zinc in several of the states, from Wiscon-

sin to southern Missouri; and salt in a number of states, especially Michigan and Kansas. Throughout the entire region, there is an abundance of limestone for cement, and of clay for making tiles, bricks, and pottery. There are also many excellent building stones, especially sandstone and limestone.

There are two conditions that favor manufacturing in any place: the first is



FIG. 173. — Miners at work digging out iron ore from underground in the — Lake Superior district.

an abundance of valuable raw materials : easy to obtain ; the second **Manufacturing** is either plenty of coal for **1. Conditions** furnishing heat and power, **favorable to** manufacturing or else good water power.

This section, unlike the Northeastern States, has little water power, with the exception of Minnesota and Wisconsin. On the other hand, coal, oil, and gas are abundant and widely distributed. Most of the Central States are well supplied with coal (Fig. 211). Raw materials of many kinds are certainly very abundant and valuable in the Central States. Name those that come from the farm ; from the forest ; from underground. With so many raw products and so much fuel for power, there has naturally



FIG. 183.—Cutting wheat in the fertile wheat region of eastern Washington. By this large machine, drawn by thirty-two mules and horses, the wheat is cut, threshed, and put into sacks ready for shipment.

of more moisture. The air then becomes so dry that a large part of the country farther east, as far as the Rocky Mountains, receives very little rain.

Again, on crossing the lofty Rocky Mountains, these west winds lose still more of their moisture. This is suggested, on the map, by the number of large rivers that find their sources in these mountains. Name and trace some of them. As a result, if winds from the Gulf of Mexico and the Atlantic Ocean did not bring some vapor for rain, the country east of the Rockies might be as dry as the Sahara Desert. As it is, some rain falls even close to the eastern base of the Rocky Mountains, so that this region, though arid, is not a true desert. Farther east the rainfall increases, until in central Kansas, Nebraska, Oklahoma, and the Dakotas there is enough for agriculture.

In the plateau and Great Basin region, which lies between the Sierra Nevada-Cascade System and the Rocky Mountains, the climate is, for the most part, dry or arid. Note the states that are included. In places, even, the climate is so dry that the country is a real desert.

On these deserts one may travel for scores of miles without seeing vegetation of any kind excepting cactus, scattered blades of grass, and such other plants as grow in dry soil. There are no trees, because of lack of water; and there is little to be seen except sand and rock. It was very difficult for early settlers to cross these arid and desert regions, for there was often no water to drink, and there was little game for food. Even to-day there are large areas where no one lives.

Some parts of this section, however, are well watered. On many ^{1. The best-watered section} Agriculture of the mountain slopes, and on some of the plateaus, there and its products is an abundance of rain for farming.

Along the Pacific coast, in particular, from central California to Canada, there

is plenty of rain (Fig. 205). Measure this distance. It is here, in western Washington, where the west winds rise to pass over the mountains, that the heaviest rainfall in the United States occurs.

This rainy region has also a mild climate and fertile soil, and is, therefore, a very rich farming country. Fruits of many kinds are raised, such, for instance, as peaches, plums, apricots, pears, apples,

ing the winter season the rain often pours down, until rushing torrents are formed among the hills and mountains. In the summer season, however, when plants most need moisture, the winds no longer blow from the ocean. On that account, no rain falls in summer, and the southern part of California is then a true desert. This is the case

2. Irrigated sections and their products
(1) Southern California



FIG. 184.—Picking oranges in the irrigated country of southern California, near Pasadena.

grapes, and berries; and farther south, in California, oranges, lemons, grapefruit, and figs thrive. In Washington (Fig. 183) and Oregon, east of the mountains, and in the Great Valley district of California, wheat growing is an important industry.

The southern half of California, being near the ocean, might be expected to receive abundant rainfall. Indeed, dur-

even within sight of the ocean, and where the soil is very fertile.

Why could not some of the rain that falls in winter be stored up then for use in summer, when wanted? That was the question that men asked, and they set to work to store up the water.

Dams were built among the hills and mountains, collecting the winter's floods into ponds and lakes, and holding the water there till summer came. Then ditches many miles long

were dug, or pipes were laid, leading the water down from these reservoirs to the fertile plains. Smaller ditches were dug from the main ones, leading to the farms in various directions. From these each farmer could turn the water into still smaller ditches on his own land, and, when he wished to do so, could flood his fields. Thus, as often as was necessary during the long, dry summer, the crops could be given the water that they needed.

This is what is meant by *irrigation*. It is quite expensive, but it is even better than rain, because it supplies the exact quantity of water that is needed, and at the time that it is wanted.

Irrigation has changed much of southern and central California from a barren desert into a paradise of flowers, fruit trees, and beautiful homes. This is the land from which many of our oranges (Fig. 184) and lemons now come, the other important source being Florida. Also, quantities of peaches, grapes, figs, olives, and nuts are raised here, as well as grain, vegetables, and other crops.

The climate is delightful, and many people go there to spend the winter. In the midst of a great irrigated garden in southern California is the large city of LOS ANGELES, surrounded by orange groves and thriving towns.

The region around SALT LAKE CITY, in Utah, is another irrigated section similar to that just described. (3) Salt Lake City and vicinity The Mormons, who first settled there, have changed that part of the desert also into a magnificent garden. The mountains, not far away, supply water for irrigation, and fruits, alfalfa, and many other farm products are produced in abundance.

Near by is the Great Salt Lake, the largest lake in the Great Basin. Although many streams descend from the neighboring mountains, so much water evaporates in this arid region that the lake does not rise high enough

to overflow. It has therefore grown more and more salt, until now its water is even much saltier than the ocean itself. It is so salt, and on that account so dense, that a person cannot sink in it.

Central Colorado, in the neighborhood of DENVER, is a third important irrigated section. There are (3) Other irrigation districts many extensive irrigation works in Idaho and Wyoming, and, indeed, all along the eastern base of the Rocky Mountains, from Mexico to Canada, as well as in the larger valleys among the mountains.

Near Denver, for example, there is a large irrigation ditch, which supplies water to hundreds of farms. It is interesting to know that in each case, while land that is low enough to be watered from the ditches is very valuable, the land that is higher than the ditches is almost worthless. Fruits, garden truck, grain, alfalfa, grass, sugar beets, and other farm products are extensively grown on these irrigated farms.

Among the Western mountains, and along the rivers, there are many other irrigated sections, as in New Mexico and Arizona. Yet the amount of irrigated land (4) Work of the in the West is small compared United States with the amount that is still government in either desert or dry enough to irrigation be called *arid*. Much of this land will probably always remain arid, because no water can be obtained for it.

There is, however, much land, now almost useless, that might be irrigated if the expense could be met. Most of this land still belongs to the United States government, and it is very important that water be brought to it, so that settlers may occupy it and make it produce valuable crops. For these reasons the United States government is now spending millions of dollars in building extensive irrigation works in the West. Some of the largest of these works are in Idaho and Arizona.

reach Chicago by boat makes this city a manufacturing center for many kinds of iron goods. It is also an important furniture manufacturing city, using much lumber brought by boat.

There are several other prosperous lake cities. The most western of these (2) *Other lake ports* are DULUTH and SUPERIOR, at the western end of Lake Superior. They are the nearest lake ports to Minnesota and North Dakota, and therefore ship much wheat. Their location near the forests and iron mines around the western end of Lake Superior leads to the shipment of large quantities of iron ore and lumber.

Farther to the east are DETROIT, TOLEDO, and CLEVELAND, which are so near the coal fields that iron manufacturing is very important. In fact, Cleveland is one of the principal iron manufacturing cities in the country; it lies not far from the coal fields, and iron ore is easily brought to it by water. Each of these cities is engaged in other kinds of manufacturing, obtaining raw products, either by water or by rail, from the surrounding country.

Locate the principal cities of these states that are situated on or near the Great Lakes. Named in order of size, they are Chicago, Cleveland, Detroit, Milwaukee, Toledo, Duluth, and Superior. In what state is each of them? On which lake? Through what lakes would one go in passing from Cleveland to Chicago? From Cleveland to Duluth? Find SAGINAW and GRAND RAPIDS, two important centers for lumber and furniture manufacturing.

The greatest river cities are naturally those on the largest rivers; namely, the 2. *Along the great rivers* Mississippi, Missouri, and Ohio. The most important (1) *St. Louis* of these cities is ST. LOUIS, which ranks fourth in size among the

cities of the United States. It is located on the Mississippi River (Fig. 177), almost at its junction with its largest tributary, the Missouri.



FIG. 177.—A great bridge across the Mississippi River at St. Louis.

Its central location opens up to St. Louis a river highway of the greatest importance. Boats can go from this city far to the northwest, by way of the Missouri River; as far as St. Paul, by way of the Mississippi; and to Pittsburgh, along the Ohio. Toward the south there is water connection with Memphis, New Orleans, and the ocean.

As people settled at this point, railways were built until, like Chicago, St. Louis has become one of our principal railway centers, and it draws to itself all the products that have been named in connection with Chicago. It is a great meat market, a noted grain market, and is engaged in manufacturing of many kinds. It is the metropolis of the Mississippi Valley, as Chicago is of the Great Lakes region, and New York of the eastern seacoast.

Although large numbers of cattle and

forests are being cut down very rapidly. This is true especially of Washington and Oregon and California, and there are many lumber mills on the lower

by far the most prominent. The salmon spends most of its life in **Fishing** the ocean, but "runs" up the rivers in order to lay its eggs in fresh water. These fish go up many streams, from California northward, and are caught in immense quantities. Great numbers, for example, run up the Columbia River, so that salmon fishing is very important there (Fig. 187). Trace this river.

Most of the salmon caught are canned, though some are sent away on ice as fresh fish. Probably much of the canned salmon that you have seen has come from the canneries either near PORTLAND, Oregon, or Puget Sound, or else along the coast farther north. ASTORIA, on the lower Columbia, and BEL-

LINGHAM, on Puget Sound, are especially noted for the salmon industry.

Although agriculture, lumbering, and fishing are important, it is for mining that the Western States are **Mining** most noted. Among the minerals, gold and silver, called the *precious metals*, are especially prominent.



FIG. 186.—The huge trunk of the Grizzly Giant, in the redwood forest of California.

Columbia River, and along the shores of Puget Sound. Find this sound on Figure 180. The mountains and high plateaus in other parts of the Western States also bear extensive forests, and here, too, lumbering is an important industry.

While there is fishing of various kinds along the Pacific coast, salmon fishing is



FIG. 187.—Salmon fishermen in the Columbia River, near Astoria, showing the large salmon caught in their nets.

raw products from the surrounding country. Much of the iron used comes from Pennsylvania and West Virginia. Why from these states rather than from the Lake Superior region? What large river city is situated in Kentucky, farther down the Ohio River?

Locate the principal cities on the large rivers, and tell for what each is important. In order of size, they are St. Louis, Cincinnati, Minneapolis, Kansas City, Louisville, St. Paul, Omaha, and St. Joseph. In which state, and on what river, is each of these? How could you go by boat from Cincinnati to St. Paul? From Cincinnati to Omaha? On what rivers would you travel in each case, and through, or on the border of, what states? Past what cities?

Two of the large cities in these states, like Atlanta in Georgia, are not located

3. Indianapolis upon important waterways. and **Columbus** These are INDIANAPOLIS,

the capital of Indiana, and COLUMBUS, the capital of Ohio. The chief reason for their rapid growth is the fact that each is situated in the central part of a very fertile state. Also, since the country is a plain, railroads enter them from all directions, making each a center of trade and manufacturing.

There are many other important cities in the Central States, about which you

4. Other cities will learn later. These include the capitals of the states.

Name and locate each of the capitals. There are also many busy manufacturing and trade centers. The largest of these are DAYTON, YOUNGSTOWN, and AKRON, Ohio; PEORIA, Illinois; and EVANS-

VILLE, TERRE HAUTE, and FORT WAYNE, Indiana. Locate each of these.

1. How do these states compare in area with the two groups already studied? In population? 2. What is the leading occupation? Which of the great Review occupations is least important here? 3. What conditions have greatly favored farming? 4. Why is there so little rainfall in the western part of this section? 5. What grains and other farm crops are raised? 6. Can you tell about each? 7. What animals are raised? 8. What can you tell about the game in the western part? 9. State the principal facts about lumbering. 10. About fishing? 11. Name the chief mineral products and tell what you can about each. 12. What conditions have greatly favored manufacturing? 13. What are the chief manufactures and farm products? 14. From lumber? 15. What minerals? 16. What do you know about transportation routes (*a*) by lake, (*b*) by land, and (*c*) by rail? 17. Name the dozen chief



FIG. 179.—A crowd of workmen leaving a factory at the close of the day at Dayton, Ohio.

in this group of states. 18. Which of these states are lake ports? 19. Which are on the rivers? 20. What two large cities are not on important waterways? 21. Name and locate the chief cities of each state. 22. Name and locate the principal cities mentioned. 23. State the principal



FIG. 189.—An Indian Chief.



the government, and when a person finds a valuable deposit of metal, he can obtain a title to the land from the government. This has led many men, called *prospectors* (Fig. 190), to live roaming about over the



A prospector with his burros, loaded with tools and supplies. In the mountains of Arizona.

steams and mountains seeking, or for, deposits of metal. Parts of the West travelers can see, the car windows, scores of little holes into the sides of the mountains by which have been hunting for ore. It is likely life that such men lead, and is full of danger. Most of them find no valuable deposits, but once a prospector discovers a hole and suddenly finds himself rich.

Now, if we look at the raw products of the Western States, we can tell what the principal kinds of manufactured products are likely to be. Name some raw products.

Wheat is ground into flour in mills, partly by means of water power. Quantities of

grapes, peaches, apples, and other fruits are either canned or dried, 1. Manufactures from farm, forest, and ranch products and many grapes are made into wine, especially in California. Lumbering gives rise to much manufacture of boards, shingles, furniture, and other articles. In some of the larger cities, the hides of cattle and sheep are manufactured into boots, shoes, and gloves, and the wool of sheep into woolen cloth; but still greater quantities of these raw materials are sent East for manufacture.

Many iron and steel goods are made along the Pacific coast and in Colorado, as well as at some other points. The ^{2. Manufactures from the products of the mines} ores of gold, silver,

copper, and lead are too heavy to haul far. Therefore, in order

to get the metals from the ores, they are crushed and melted at many points. The buildings in which the crushing is done are called *stamp mills*, and those where the ore is melted are called *smelters* (Fig. 191). Since mining is so prominent



FIG. 191.—A smelter at Pueblo, Colorado, where the metal is obtained from the ore.

the sea gradually increases to about a mile. Then come the *Rocky Mountains*, which rise five or ten thousand feet higher. Note the states that they cross. The name *Rocky* suggests how difficult it is to travel over them, for they are very rough, as well as high.



FIG. 181.—A lake in the picturesque Rocky Mountains of Montana.

For nearly a thousand miles to the west is a broad plateau with one part, called the *Great Basin*, lower than the rest. In this basin are numerous lower, short mountain ranges, called the *Basin Ranges*. On the western side of the Great Basin, in California, are the *Sierra Nevada* ranges; and farther north, in Oregon and Washington, are the *Cascade Ranges*. Before the Pacific is reached, still a fourth system of mountains, called the *Coast Ranges*, must be crossed. They are separated from the *Sierra Nevada* by a broad valley. All these Western mountains together are known as the *Western Cordillera*.

A third reason for so sparse a population is the lack of rain. We have al-

ready learned that the western parts of Texas (p. 122) and the states farther north (p. 133) receive too little rain for agriculture.

There are two reasons for this dryness. In the first place, in the southern portion the winds blow from the land, not from the ocean. They cannot, therefore, carry much vapor, and part of the country is true desert (Fig. 182).

In the second place, although the winds farther north blow from the Pacific Ocean, they soon lose their moisture. They have plenty of vapor when they reach the coast, but as they rise over the mountains, much



FIG. 182.—Desert landscape in southwestern United States. Only scattered bushes grow in this sandy waste.

this falls as rain or snow. The rainfall is therefore very heavy on and near the Coast Ranges. Continuing eastward, the winds blow over the *Sierra Nevada* and *Cascade* ranges, and are there robbed



FIG. 183. —Cutting wheat in the fertile wheat region of eastern Washington. By this large machine, drawn by thirty-two mules and horses, the wheat is cut, threshed, and put into sacks ready for shipment.

of more moisture. The air then becomes so dry that a large part of the country farther east, as far as the Rocky Mountains, receives very little rain.

Again, on crossing the lofty Rocky Mountains, these west winds lose still more of their moisture. This is suggested, on the map, by the number of large rivers that find their sources in these mountains. Name and trace some of them. As a result, if winds from the Gulf of Mexico and the Atlantic Ocean did not bring some vapor for rain, the country east of the Rockies might be as dry as the Sahara Desert. As it is, some rain falls even close to the eastern base of the Rocky Mountains, so that this region, though arid, is not a true desert. Farther east the rainfall increases, until in central Kansas, Nebraska, Oklahoma, and the Dakotas there is enough for agriculture.

In the plateau and Great Basin region, which lies between the Sierra Nevada-Cascade System and the Rocky Mountains, the climate is, for the most part, dry or arid. Note the states that are included. In places, even, the climate is so dry that the country is a real desert.

On these deserts one may travel for scores of miles without seeing vegetation of any kind excepting cactus, scattered blades of grass, and such other plants as grow in dry soil. There are no trees, because of lack of water; and there is little to be seen except sand and rock. It was very difficult for early settlers to cross these arid and desert regions, for there was often no water to drink, and there was little game for food. Even to-day there are large areas where no one lives.

Some parts of this section, however, are well watered. On many ^{1. The best-watered section} Agriculture of the mountain slopes, and on some of the plateaus, there is an abundance of rain for farming.

Along the Pacific coast, in particular, from central California to Canada, there

is plenty of rain (Fig. 205). Measure this distance. It is here, in western Washington, where the west winds rise to pass over the mountains, that the heaviest rainfall in the United States occurs.

This rainy region has also a mild climate and fertile soil, and is, therefore, a very rich farming country. Fruits of many kinds are raised, such, for instance, as peaches, plums, apricots, pears, apples,

ing the winter season the rain often pours down, until rushing torrents are formed among the hills and mountains. In the summer season, however, when plants most need moisture, the winds no longer blow from the ocean. On that account, no rain falls in summer, and the southern part of California is then a true desert. This is the ca-

**2. Irrigated so-
tions and their
products**
**(1) Southern
California**



FIG. 184.—Picking oranges in the irrigated country of southern California, near Pasadena.

grapes, and berries; and farther south, in California, oranges, lemons, grapefruit, and figs thrive. In Washington (Fig. 183) and Oregon, east of the mountains, and in the Great Valley district of California, wheat growing is an important industry.

The southern half of California, being near the ocean, might be expected to receive abundant rainfall. Indeed, dur-

even within sight of the ocean, and where the soil is very fertile.

Why could not some of the rain that falls in winter be stored up then for use in summer, when wanted? That was the question that men asked, and they set to work to store up the water.

Dams were built among the hills and mountains, collecting the winter's floods into ponds and lakes, and holding the water there till summer came. Then ditches many miles long

EBLO, farther south, has much the relation to the surrounding country Denver has. Ores are shipped to lo for smelting, and since both coal ron ore are found not far distant, smelting (Fig. 191) and manufac-
g have developed.

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Many smaller cities and towns in the West, about some of which you will learn later, are important trade centers in the farming or ranching country.

BUTTE, in Montana, may ⁽³⁾ *Butte* be taken as a good exam- ple of a flourishing *mining center*.



—The Canyon of the Colorado, a gash of over a mile in depth cut by the river in the solid rock.

The products of the farms find way to the city for sale, and, in the city supplies the farmers with es that they need. It also supplies to the mining towns in the neighbor- mountains. The same is true of Idaho, and TUCSON and PHOENIX,

though most of them are only small towns, or "camps."

Besides such cities as have just been mentioned, there is one other important kind; that is, the pleasure ^{Pleasure and} and health resort. The dry, ^{health resorts} sunny climate of much of the West is

While the greater part of the arid lands is without irrigation, and for that reason is not cultivated, it

3. Ranching is by no means entirely useless. Most of it receives rainfall enough for a crop of nourishing grass. This vast arid section, therefore, is valuable for grazing. It is the land of the cattle ranch (Fig. 185) and of the cowboy, who

In many parts of the West one can travel on horseback for days without seeing any trees, excepting, perhaps, some cottonwoods growing along a stream. Yet this is not true of all parts, for there are extensive forests on the mountains and plateaus, and the Pacific coast is the land of the big trees. The largest trees in the



FIG. 185.—Cattle drinking in the ranch country of western North Dakota.

spends most of his time in the saddle looking after his herds. Besides cattle many sheep and horses are also raised.

The sheep are driven in flocks from place to place for feeding, but the cattle and horses are often allowed to roam about almost like wild animals. Many single ranchmen own thousands of sheep or cattle. Since the grass on which they feed grows in scattered tufts, the animals must wander over much land in feeding. It is plain, therefore, that the ranchmen must live far apart, and that a grazing country has very few people.

The cattle and sheep are shipped eastward in great numbers, even to Europe, to furnish meat, leather, and wool.

world grow here, and some of them have been growing for a thousand years or more.

Many of the trees are as large round as an ordinary living room, and several have been found to be over ninety feet in circumference, which is as much as the distance around many a schoolroom. The main limb on one of these trees, called the Grizzly Giant (Fig. 186), starts from the trunk two hundred feet above ground, and measures six and one half feet in diameter, or more than most large trees in the East. A single giant tree will supply lumber enough to build a whole house.

In such a region lumbering is naturally a flourishing industry, and the

are being cut down very rapidly. It is true especially of Washington, Oregon and California, and there are many lumber mills on the lower

by far the most prominent. The salmon spends most of its life in ^{Fishing} the ocean, but "runs" up the rivers in order to lay its eggs in fresh water. These fish go up many streams, from California northward, and are caught in immense quantities. Great numbers, for example, run up the Columbia River, so that salmon fishing is very important there (Fig. 187). Trace this river.

Most of the salmon caught are canned, though some are sent away on ice as fresh fish. Probably much of the canned salmon that you have seen has come from the canneries either near PORTLAND, Oregon, or Puget Sound, or else along the coast farther north. ASTORIA, on the lower Columbia, and BEL-

LINGHAM, on Puget Sound, are especially noted for the salmon industry.

Although agriculture, lumbering, and fishing are important, it is for mining that the Western States are ^{Mining} most noted. Among the minerals, gold and silver, called the *precious metals*, are especially prominent.



—The huge trunk of the Grizzly Giant, in the redwood forest of California.

oia River, and along the shores of Sound. Find this sound on Figure The mountains and high plateaus or parts of the Western States also extensive forests, and here, too, is an important industry. le there is fishing of various kinds the Pacific coast, salmon fishing is



57.—Salmon fishermen in the Columbia River, near Astoria, showing the large salmon caught in their nets.

1. Gold Gold is the most valuable of all. When gold was first discovered in the stream gravels of California, in 1848, thousands of persons, in the East and in Europe, made a mad rush to the new gold fields.

At that time the journey to the Pacific coast required many weeks of steady travel. Some went on ships, going by way of the Isthmus of Panama, or even sailing completely around South America; but great numbers traveled directly across the continent in wagons, toiling slowly across the plains, mountains, and plateaus, accompanied by their families. Some used oxen, others horses. The journey overland was difficult and dangerous, for there were bands of roaming Indians (Fig. 189); the trails were poorly marked, so that one might easily lose his way; and in the desert one might even die of thirst. Hundreds of people perished on the way.

Later, gold was found in the midst of the solid rock among the mountains. Such rock, with gold in it, is called *gold ore*, and this must be crushed into fine bits before the gold can be collected. This requires much machinery, and is one of the important parts of mining.

Gold is now mined in several states besides California. Indeed, more gold now comes from Colorado than from California. DENVER, the largest city in Colorado, and PUEBLO, not far distant, owe their growth in large part to the gold and other minerals mined near them. Find these cities on the map.

2. Silver Silver is another precious metal found in the West. Nevada produces more silver than any other state in the Union, but much is

obtained in Montana, Utah, Colorado and Idaho (Fig. 188). Each of these also produces large quantities of

Copper is a third valuable metal. The greatest copper mines in the world are situated in and near BUTTE, in Montana. More has come from Montana than from any other state; but Arizona now produces even more than Montana, and in Arizona is a great mining center.

Lead is a fourth metal mined in the West. Idaho produces the largest amount, but comes also from Colorado and Utah. These are some of the uses of copper and lead.

Iron ore is found in many of the Western States, but little is mined as yet, except in Colorado. Most of the Western States produce some coal, Colorado and Wyoming being in the lead. Coal mining in the West is increasing, for there is much excellent coal.

Petroleum has been found in many Western States, especially in California. In fact, this state produces more oil than any



FIG. 188.—Miners at work underground in one of the silver-lead mines of the famous Coeur d'Alene district of Idaho.

state in the Union. So much petroleum is found there that it is even used as fuel for way engines.

The Western United States is the leading producing section in the world, and every year new mines are discovered. Much of the



FIG. 189.—An Indian Chief.

government, and when a person finds a deposit of metal, he can obtain a title to the land from the government. This has led many men, called *prospectors* (Fig. 190), to live roaming about over the



prospector with his burros, loaded with tools and supplies. In the mountains of Arizona.

meadows and mountains seeking, or rather, deposits of metal. Parts of the West travelers can see, in the car windows, scores of little holes into the sides of the mountains by which have been hunting for ore. It is a life that such men lead, and is dangerous. Most of them find no valuable deposits, but once a prospector discovers a vein, he suddenly finds himself rich.

If we know the raw products of the Western States, we can tell what the principal kinds of manufacture are likely to be. Name a few products.

Ground into flour in mills, partly by means of power. Quantities of

grapes, peaches, apples, and other fruits are either canned or dried, 1. Manufactures from farm, forest, and ranch products

and many grapes are made into wine, especially in California. Lumbering gives rise to much manufacture of boards, shingles, furniture, and other articles. In some of the larger cities, the hides of cattle and sheep are manufactured into boots, shoes, and gloves, and the wool of sheep into woolen cloth; but still greater quantities of these raw materials are sent East for manufacture.

Many iron and steel goods are made along the Pacific coast and in Colorado, as well as at some other points. The products of the mines

ores of gold, silver, copper, and lead are too heavy to haul far. Therefore, in order to get the metals from the ores, they are crushed and melted at many points. The buildings in which the crushing is done are called *stamp mills*, and those where the ore is melted are called *smelters* (Fig. 191). Since mining is so prominent,



FIG. 191.—A smelter at Pueblo, Colorado, where the metal is obtained from the ore.

to the very sea, and in the background are snow-capped mountains, with glaciers in their valleys.

The mountains make it very difficult to build railways; yet a short road leads inland over one of the passes, called White Pass, and others are now being built. One of the principal routes to the interior is up the Yukon River by steamboat; but in most parts of Alaska travel is still very slow and difficult. In most sections there are not even trails as yet.

There are only a few towns in Alaska, and most of these vary greatly in size

Towns from year to year. Many of the people spend only the warmer season there, going in the spring and returning to the states in the autumn. JUNEAU is now the capital, but SITKA was formerly the capital.

2. Cuba and Porto Rico

On his first voyage, Columbus discovered some islands southeast of the United States (Fig. 133). These were later called the West Indies, because, as you remember (p. 86), Columbus thought he had reached India.

The Spaniards took possession of these islands, and long held the larger ones as

How these islands happen to be under our guidance colonies. The people were not content under Spanish rule, and there was much trouble and bloodshed. Yet

Spain held Cuba and Porto Rico until 1898. At that time the Cubans were fighting a war for independence, and the United States went to their aid. This quickly brought on a war between our country and Spain, called the Spanish-American War. Spain gave up Cuba and Porto Rico at the end of the war. Our government then took control of Porto Rico, and holds it still; but Cuba was allowed its independence, under our

protection. It is not, therefore, really a part of our territory, as Porto Rico is.

Spanish is the language spoken on both of these islands, and many of the people are Spaniards; but there are also many negroes and half-breeds.

In what zone do these islands lie? That fact alone tells you that they are very different from Alaska. **Their chief products** Not only is the climate warm (Fig. 200), but there is an abun-



FIG. 200.—Palm trees in Havana. Examples of tropical vegetation.

dance of rain, and a very fertile soil. Their products, therefore, are partly the same as those that were found peculiar to the Southern States. What were those (p. 122)?

In both islands the principal product is sugar cane, from which great quantities of sugar are made. Much tobacco and coffee are also grown, as well as



—A part of the water front of San Francisco, where the ferries from Oakland are all the time going and coming.

the case of other cities on fine, large there is one main city, with other im- nes near by. San Francisco is far the but OAKLAND, BERKELEY and ALA- just across the Bay from it. SACRA- the capital of the state, lies a short northeast, STOCKTON east, FRESNO and south, of San Francisco.

San Francisco and Oakland are busy manufacturing centers, having foundries, machine shops, flour and woolen mills, many other factories, and shipyards. The fire that followed the earthquake of 1906 destroyed many of the best buildings in the city, and for a short time greatly checked its growth. It is wonderful how rapidly San Francisco recovered from that severe blow. In rebuilding it, the people have made even a finer city than before, with many large, modern buildings.

LOS ANGELES, far southeast of San Francisco, is the principal city in (2) *Los Angeles* southern California. It lies twenty-five miles from the coast in the midst of a remarkable fruit region, from which vast quantities of fresh, dried, and canned fruits are shipped, mainly by rail. What has already been said about this city (p. 147)?

PORTLAND (Fig. 193) is the chief city of (3) *Portland* Oregon, having extensive manufactoryes of



The city of Portland, with the lofty and beautiful snow-covered peak of the volcano, Mt. Hood, in the distance.

woolen goods, flour, and furniture. It is a distributing point for the fertile country round about, and is reached by several of the transcontinental railroads. It has much trade with Alaska and Asia, and is growing very rapidly.

On the shores of Puget Sound are ^{(4) Cities on} SEATTLE and TACOMA, as well as Bellingham and Everett and ^{Puget Sound} several smaller cities and towns. Transcontinental lines extend to

SPOKANE, in eastern Washington, is situated in the midst of a fertile wheat and fruit region, for which ^{(1) Spokane} it is the principal trade center. Being located on the Spokane River, at a point where falls supply an abundance of water power (Fig. 194), extensive manufacturing has developed, especially lumber and flour mills. Three transcontinental lines enter Spokane, and it has grown very rapidly. It is



FIG. 194.—The falls in the Spokane River, around which the city of Spokane has grown.

these two cities, which are also connected by rail with Portland and San Francisco to the south, and Vancouver to the north. These cities are centers for lumber, and also for the distribution of such goods as are needed in the farming country.

Seattle, being the farthest north of the west coast cities, has the most extensive trade with Alaska. There is also a great and growing trade with the countries of Asia. As in the case of Portland, the recent growth of this city has been remarkable.

The inland cities are of several kinds. Some are largely manufacturing cities; others are mainly centers of ^{2. Inland cities} trade; while many are almost wholly mining cities.

the trade center for the famous Cœur d'Alène mining regions of Idaho, from which come great quantities of silver and lead.

DENVER, the largest city in the interior, is mainly a manufacturing and trading center. It lies out on the ^{(2) Denver, Pueblo, and Salt Lake City} plains, close to the eastern base of the Rocky Mountains. Being a railroad center, goods are easily shipped to and from the surrounding farming and ranching country. There are no mines close by, but in the mountains, at no great distance, are valuable mines of gold, silver, and lead, as at CRIPPLE CREEK and LEADVILLE. Much of the ore from these places is shipped to Denver for smelting.

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The Canyon of the Colorado, a gash of over a mile in depth cut by the river in the solid rock.

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though most of them are only small towns, or "camps."

Besides such cities as have just been mentioned, there is one other important kind; that is, the pleasure ^{Pleasure and} health resort. The dry, ^{health resorts} sunny climate of much of the West is

favorable to invalids, and pleasant for any one. For this reason great numbers

1. Health resorts of people go for their health to COLORADO SPRINGS, in Colorado, to LOS ANGELES, in California, and to other parts of the Southwest. Many also go to the seacoast, as to SAN DIEGO, for a winter resort, since the climate there is warm throughout the winter.

Many other people visit the West as tourists, for western

2. The lofty mountains United States has some of the finest scenery in the world. There are vast plateaus and rugged mountain ranges, on some of which snow and glaciers are always present. Among them are deep valleys, shut in by lofty mountains; beautiful lakes, like Lake Tahoe in California and Crater Lake in Oregon; and wonderful waterfalls, like the Yosemite Falls in California and the Shoshone Falls in Idaho. There are also finely shaped volcanic cones, such as Mt. Rainier, Mt. Hood, and Mt. Shasta, more than fourteen thousand feet high. Locate these volcanoes.

In addition to such scenery, there are many deep, narrow

3. Grand Canyon of the Colorado valleys, or *canyons*, the largest of which is the *Grand Canyon of the Colorado River* (Fig. 195), in Arizona.

This is a mighty gash cut into the earth by the Colorado River, which flows along its bottom a mile below the surface of the plateau. This canyon has been cut through rock layers that are brightly colored, and that are gullied into many

odd shapes. It is one of the greatest scenes on the earth.

North of this, in the northwest of Wyoming, there is a section that has no equal among all the wonders of the world.

4. Yellowstone Nation



FIG. 196.—The Giant Geyser in eruption, one of the many in the Yellowstone National Park.

known as the *Yellowstone National* is so wonderful that it has been set by the government as a national park to which people are freely admitted.

Here are hundreds of springs which boiling hot water pours forth,

some places, the boiling water and steam now and then shoot upward with a roar, rising to a height of from one hundred to two hundred feet. These springs are called *geysers* (Fig. 196), and there are scores of them in the Park.

Here, too, is the Yellowstone River, whose waters tumble three hundred and eight feet in



FIG. 197.—A grizzly bear in the Yellowstone National Park.

a single fall. In the deep canyon, which the river has cut below the Yellowstone Falls, the rocky banks are, in places, a quarter of a mile high, and beautifully colored. It is truly called a "Wonderland."

The law allows no wild animals to be killed in the National Park. For this reason they have thrived here, and as one goes through the Park, he can sometimes see them in the woods by the roadside. Among the large animals are the elk, the black bear, the grizzly bear (Fig. 197), and the buffalo or bison. This is now the only place in the United States where the bison is found in a wild state, although there were tens of thousands of them when the Western country was first visited by white men.

Review Questions

1. What have you learned about the area and population of these states?
2. Give three reasons for so small a population.
3. What mountains are included in the Western Cordillera?

4. Why is there so little rain in most of these states? 5. Locate the best-watered section, and name its farm products. 6. What are the farm products of California? 7. Explain how land is irrigated. 8. Tell about Salt Lake City and vicinity. 9. About Denver and vicinity. 10. What is the United States government doing for irrigation? 11. Tell about ranching in the West. 12. What about lumbering? 13. Fishing? 14. What minerals are extensively mined in these states? 15. State the principal facts about gold mining. 16. About silver. 17. About copper and lead. 18. About iron, coal, and petroleum. 19. What do prospectors do? 20. What about the importance of mining in these states? 21. What about the manufacturing? 22. How are trade and transportation provided for? 23. State the principal facts about San Francisco and vicinity. 24. Los Angeles. 25. Portland. 26. Cities on Puget Sound. 27. What different kinds of inland cities are there? 28. Tell about Spokane. 29. Denver, Pueblo, and Salt Lake City. 30. Butte. 31. Name and locate the principal cities in these states. 32. Why are there many pleasure and health resorts in the West? Name the principal

ones. 33. Tell about the mountain scenery. 34. Describe the Grand Canyon of the Colorado. 35. What is there of interest in the Yellowstone National Park?

1. Describe an imaginary overland journey to California in the early days. 2. Make a list of articles made of gold; of silver; of copper; of lead. **Suggestions**
3. Obtain some of these ores for the school collection.
4. Ask some grocer what California fruits he keeps.
5. Visit a fish market to see some salmon. Find the picture of one in the dictionary. Make a drawing of it.
6. Show how you might irrigate a certain piece of land near you.
7. Write to some Western railway asking for their illustrated circulars, in which are many views of Western scenery.
8. Through what states must the waters of the Yellowstone River flow in reaching the Gulf of Mexico?
9. Past what cities?
10. Make a drawing of the Western States, showing the principal

mountain ranges, rivers, and cities. 11. Make a sand map of the same. 12. Name and locate the capital of each state. 13. Write the abbreviation used for each state.

VIII. DEPENDENCIES OF THE UNITED STATES

1. On the map of the world (Fig. 106) locate (a) Alaska; (b) Porto Rico; (c) The Philippine Islands; (d) The Hawaiian Islands. 2. On the map of North America (Fig. 133) locate Alaska, and Porto Rico. 3. Bound Alaska. 4. What large river crosses Alaska? 5. Name the largest islands in the Philippines (Fig. 272).

A good part of Alaska is mountainous (Fig. 198), and much of it is in the frigid zone, as you can see. About how much of it? In addition, at that time we already had more land than we knew what to do with. For these reasons, most persons thought that the purchase of Alaska was very unwise. They even called it "Seward's folly," because Secretary Seward, who was in President Lincoln's cabinet, was the one who chiefly urged the purchase.

It has turned out, however, to be a wise purchase, indeed, for Reasons why Alaska has come to be an important part of the United States, and is developing rapidly. it was a wise purchase



FIG. 198.—The snow-covered mountains of the St. Elias chain, Alaska.

I. Alaska

Alaska (Fig. 133), which was purchased from Russia in 1867 (for \$7,200,000), is almost one fifth as Purchase of Alaska, and why it at first seemed unwise large as the United States. Measure to see how far this territory is from our nearest ports, on Puget Sound. Most people thought it very foolish to buy a territory so far away and so far north.

Most of Alaska is too mountainous and cold for agriculture. Yet the summers are warmer than one might expect, and some parts of the country are level enough for farming. Already some crops are raised there, and, doubtless, portions of Alaska will some day produce the more hardy grains and vegetables. Doubtless, also, grazing will become important, for there are extensive natural pastures on which sheep and cattle can feed. In addition, the forests will some day be of value, for there are large areas covered with timber.

resent the fishing proves the wisdom of the purchase of Alaska much more than the es just mentioned.

Catching of seals was the first of importance there. One kind of Alaskan seal, called the *fur seal*, has a very fine fur, highly prized for making muffs es. Already seven times as much has come from sealing as was the entire territory of Alaska. ns are especially valued because

These fish are caught and taken to the canneries, where they are cooked and placed in cans, for shipment to all parts of the world. Already, the salmon taken from the Alaskan streams have yielded ten times as much money as Alaska cost us.

Among other fish, halibut and codfish are common on the shallow banks along the Alaskan coast, and vessels from our Western States now go there to catch them.

It is, however, the gold that has attracted most attention to this territory. The fa- ^{3. Mining} famous *Klondike* re- gion, in northwestern Canada, first drew large numbers of men to Alaska; for the easiest route to the Klondike was across Alaska. Thousands of prospectors rushed there in 1896 and 1897, just as they did to California in 1849.

Valuable deposits of gold have since been found at NOME and other places in Alaska. Already more than twenty times as much gold has been mined as we paid for the entire territory, and Alaska now produces two or three times as much gold each year as we paid to Russia.

There are also very extensive deposits of copper and coal, but as yet these minerals have not been mined to any great extent.

So many persons go to Alaska for the mining and fishing, or for the scenery, that steamships, chiefly from Seattle, now make regular trips up the Alaskan ^{Transporta-} coast. It is one of the most wonderful voyages in the world. For a thousand miles, from Seattle northward, the steamer threads its way through a narrow passage, bordered on either side by lofty mountains (Fig. 199). Precipices and wooded slopes come down



—One of the fiords of the narrow "Inside Passage" to Alaska.

warmth and beauty; and as no great number of them, they y expensive. A woman must eral hundred dollars for a seal-t.

recently the salmon has come f great value. Here, as in the Columbia River (p. 149), tens of thousands of salmon go up the streams every , in order to lay their eggs in ater. Indeed, explorers in that , when wanting salmon for food, ck them out of the small streams, of catching them in the usual

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abundance of rain, and a very fertile soil. Their products, therefore, are partly the same as those that were found in the Southern States. What are those (p. 122)?

In both islands the principal product is sugar cane, from which great quantities of sugar are made. Much coffee and coffee are also grown, as well as

oranges, bananas, pineapples, and other tropical fruits. From the forests valuable tropical woods are obtained.

Much of the trade of both islands is with the United States. The largest city is **HAVANA**, in Cuba, which is as large as Minneapolis. Locate this city. The chief city of Porto Rico is **PONCE**, but **SAN JUAN** is nearly as large.



FIG. 201.—A native Philippine girl.

3. The Philippine Islands

The Philippine Islands (Fig. 106) were also obtained as a result of the Spanish-American War. At first they were governed entirely by the United States, but now they have their own legislature, and partly govern themselves.

M

Find these islands on Figure 272; also on a globe. Name and locate the larger islands (Fig. 301). How would you reach them from San Francisco? From New York? Through what waters would you pass?

There is a great mixture of people in the Philippine Islands. There are some Spanish, some Americans, Kinds of and many Japanese and people Chinese, but most of the inhabitants are natives (Fig. 201).

There are several races among the natives, most of whom are partly or wholly civilized. Of these the *Tagalogs* are most advanced, having learned the arts of civilization from the Spaniards. A number of small islands in the southwestern part of the main group are occupied by Mohammedans, called *Moros*. Among the mountainous parts of the other islands, real savages live in the dense forests of the interior. Some of these savages, called *Negritos*, or little negroes, are a race of very small, black people.

The United States has the difficult task of governing and teaching these people until they become able to look after themselves. While the natives speak different languages, Spanish is the most common one, as in Cuba and Porto Rico. The use of the English language, however, is rapidly increasing.

There are more than three thousand islands, large and small, in the whole group, and all of them lie in the tropical zone. Some of their products, therefore, are sugar, coffee, rice, tobacco, and tropical fruits. One of the most valuable of all the products is hemp, large quantities of which are shipped abroad. This hemp is used in making a fine quality of rope, called Manila rope.

The dense tropical forests, which cover parts of the islands, contain valuable kinds of hardwood. There are

some minerals, but thus far there has been little mining.

The two largest islands are *Luzon*, which is nearly as large as Pennsylvania,

Area, population, and chief city and *Mindanao*, which is a little smaller than

Luzon. How far apart are they? The area of all the islands together is about three times that of Pennsylvania.

Luzon has about half as many people as Pennsylvania, and all the islands together have about eight million inhabitants. There are, therefore, many towns and some large cities. The principal city is *MANILA*, situated on a fine harbor in *Luzon*. It has an extensive trade with the United States and Europe.

Every few years one of the forth in eruption, and then varieties of melted rock, or *lava*, p the slopes toward the sea.



FIG. 202. — A house in the Philippines, built of bamboo and thatch. The house is raised above the ground because of the

4. The Hawaiian Islands

Far out in the Pacific, between the United States and the Philippines

(Fig. 106), lies a group of small islands called the Hawaiian Islands. They used to form a little kingdom, but in 1893 the people rebelled and formed a republic. Later they asked to be made a part of the United States, and in 1898 this was done.

These islands are very small, and are scattered over a distance of a thousand miles. They are built of lava that has risen from within the earth, and on Hawaii (Fig. 301), the largest island, there are two volcanoes that are still active.

Such islands, so far away seem to be of little value. Yet many vessels that make the long journey from our Western seaports to Japan, Australia, and the Philippines now and then suffer accidents on the way, and run the risk of getting out of coal and other supplies. These islands lie on the route of these vessels take, and about half of the way between the United States and Asia. For these reasons the Hawaiian Islands are of great importance to us; they serve as a stopping place where repairs can be made, and coal and supplies can be obtained.

You can, perhaps, name the products of the Hawaiian Islands.

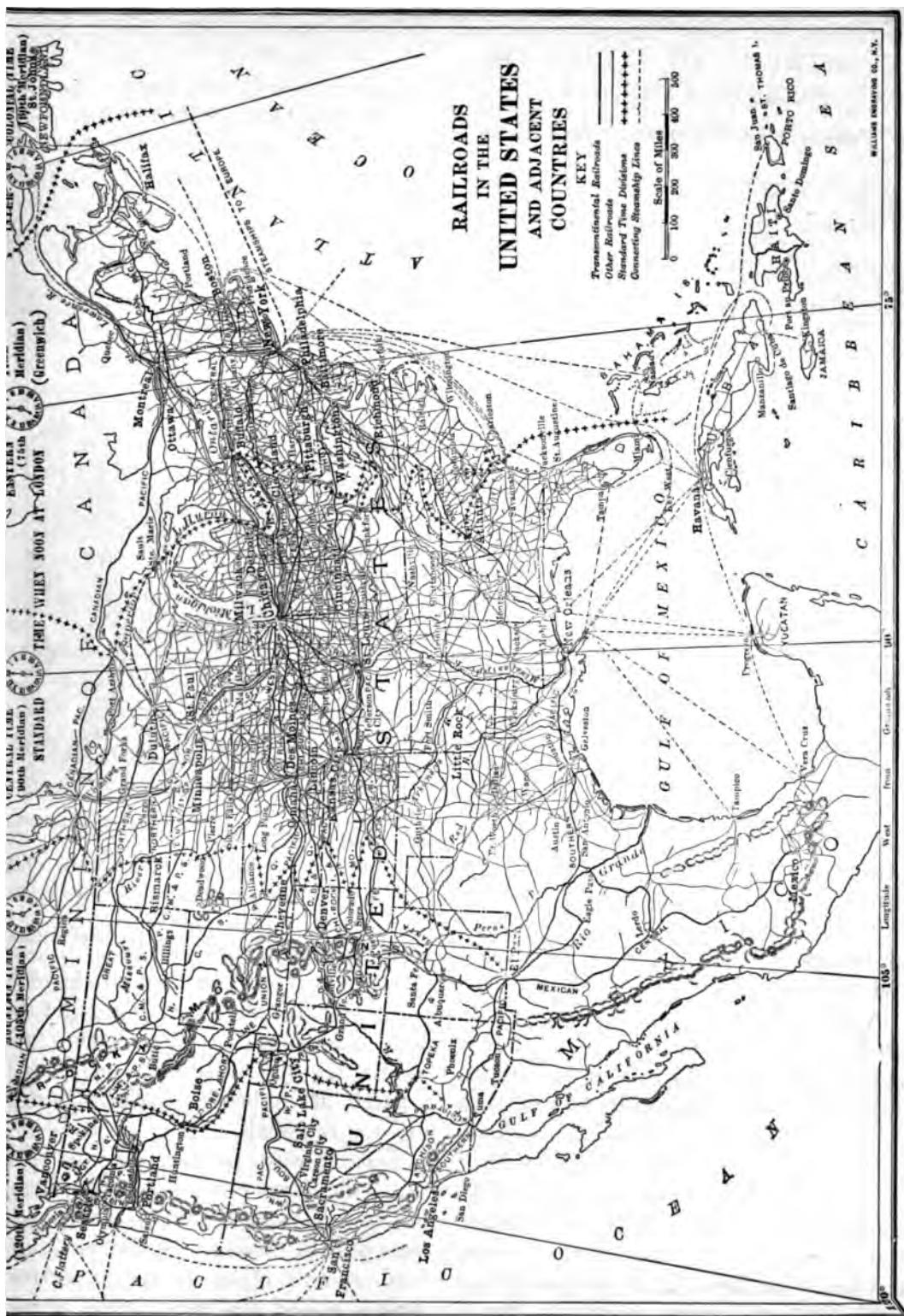


Fig. 214.—Map showing the railroads of the United States.

IX. REVIEW OF THE UNITED STATES, WITH COMPARISONS

We have seen that the forty-eight states in our Union have been settled by people who came from the East. First, the Atlantic coast was settled by immigrants from England and other countries of Europe. Then there was a movement of pioneers westward across the Appalachian Mountains and

and most of our twenty-five largest cities would be found *east* of this line.

While this line would pass through the middle of the country, the *center of population* would be to the east of it. It is a long distance east, too. You can find this point, in southeastern Indiana, marked by a star on the map (Fig. 204). There are just about as many persons per square mile in the United States living east of this line as west of it, and as many north as south. That is what is meant by the center of population. How far do you live from this point?

From the map (Fig. 204) you can tell which parts of the country are most densely settled. Where are they? What parts are less densely settled? What you have learned can you give in one sentence in each case?

Of the great occupations in the

United States, that of agriculture is the most important. More than one third of all the workers in our country are engaged in that one branch of industry.

Conditions in the United States are very favorable to agriculture. In the part, except on the highest mountains, is it too cold to raise valuable crops; and in most places the soil is fertile. Name some states that have very fertile soil (pp. 122, 133). Is there a section where the soil is not so good (p. 109)? Why is hilly and mountainous country not well suited to farming (p.

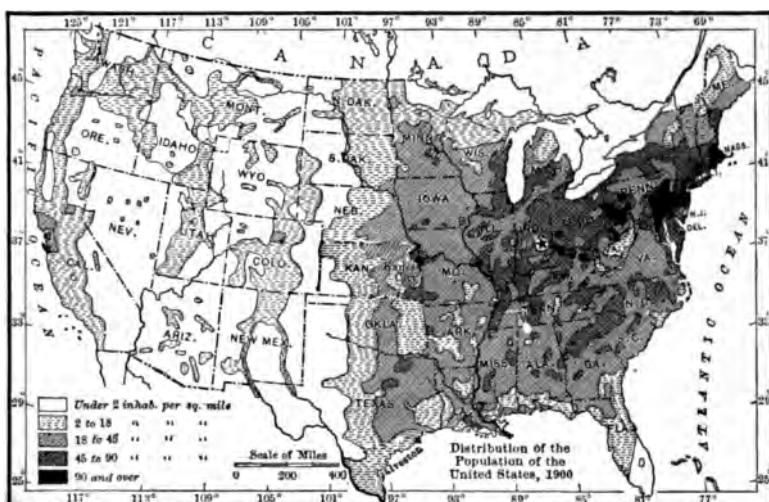


FIG. 204.—Distribution of population in the United States, 1900.

the Mississippi Valley. Finally, settlers pushed across the Western mountains, until the Pacific coast was reached. Now the ninety-two million persons in the United States are distributed over all parts of the country.

They are by no means evenly distributed. On Figure 204, if you drew a line from Galveston, Texas, directly northward, past Kansas City, Missouri, to our northern boundary, you would divide the United States into two nearly equal parts. But the number of people would not be divided equally, by any means. Far the greater number of them,

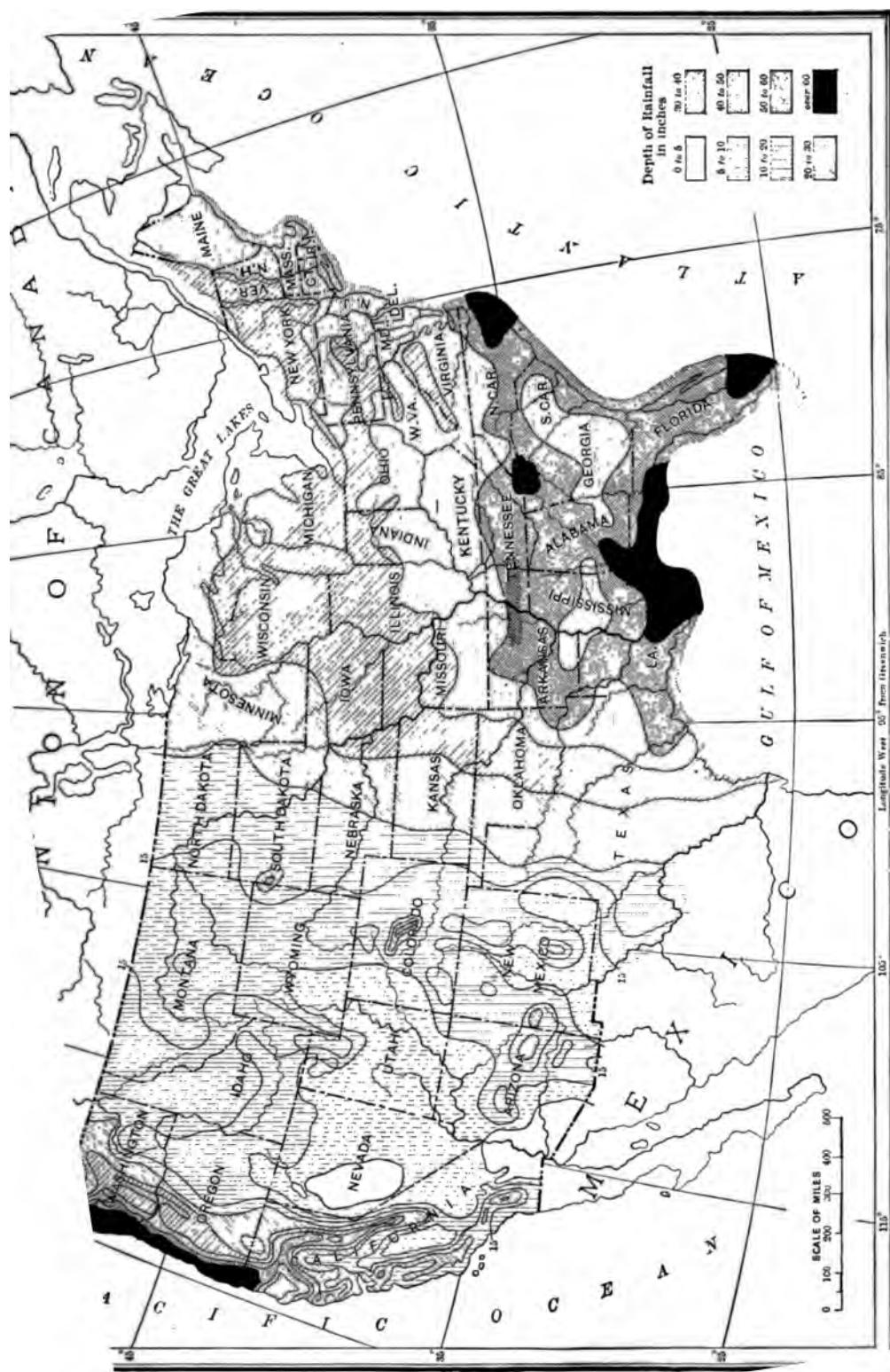


FIG. 2K.—Rainfall map of the United States.

The lack of rain is the chief hindrance to farming in several of the states. Figure 205 shows how much rain falls

in some sections more than in others. One of these is wheat. Figure 206 shows the states which the largest quantities of wheat are grown. Which states? For what wheat used?

Figure 207 shows the same for corn. What states produce large amounts of corn? What uses are made of corn? Why is corn the principal corn section south of that of wheat (p. 134)?

Still other crops are confined to certain

in different parts of our country. Which section receives the greatest amount? What states suffer for want of it? In what sections is irrigation extensively developed (p. 146)? Name some states that are partly deserts. Why do these regions have so little rain (p. 144)?

Certain important farm products are found in almost every place where there is farming. One of these is hay; another cattle, together with milk and butter; a third is poultry; a fourth is potatoes; a fifth is apples. Why should

tions of the country. What three very important farm products are confined to our Southern States? Name



FIG. 206.—The wheat regions of the United States.

these products be so common? Where is dairy farming prominent? Why there (p. 109)?

states in which each is grown (pp. 123). Which states produce most tobacco (p. 123)? Where else is it cultivated?

While fruits are common in all parts of the country, there are different kinds in different sections. Show, on Figure 208, what two states grow oranges, lemons, and other semitropical fruits, very extensively. What states grow large quantities of grapes?

The greatest number of hogs are raised in the states where there is much corn. Do you see the reason for this? What states, therefore, produce most hogs?

While cattle are found in very many states, Texas has a third more than Iowa, which ranks second in this respect; New York ranks third, and Kansas fourth. From what has been said, can you explain why these states raise so many cattle (p. 148)?

Sheep are likewise raised in many sections. The state that produces the greatest number is Wyoming, followed by Montana and Idaho. Why are there so many sheep in these states (p. 148)?

Although farming is by far our greatest industry, it is surprising how little land that is cultivated all our land is now really under cultivation.

Figure 209 makes this clear by the use of a circle. The circle represents all the land in the United States, and the portion marked *improved* shows the part that is now used to produce crops. The part of the circle marked *unimproved* shows the proportion that has not yet been plowed, or otherwise improved, so as to

raise crops. Some of it is swamp land, some is covered with forest or underbrush, some is used for grazing. From this figure it is plain that less than one fourth of all the land in our country is now really cultivated; and more than one half is not even in farms.

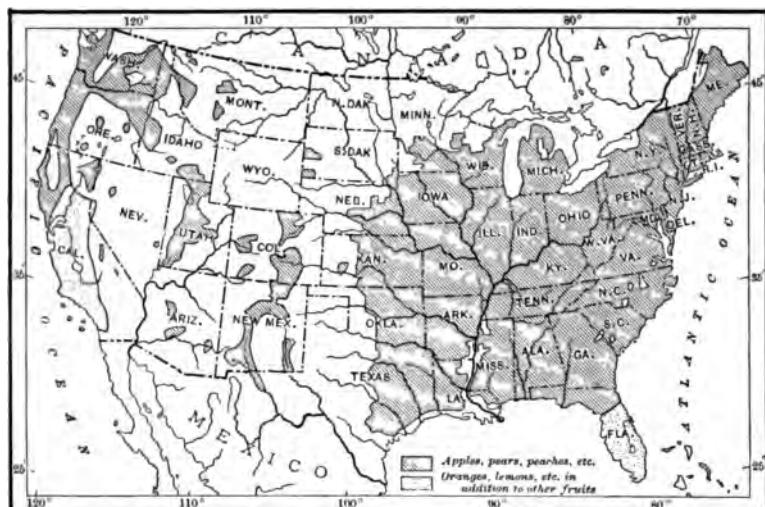


FIG. 208.—Map showing the sections of the country where fruit raising is extensively carried on.

One reason why there is so little cultivated land is that, as yet, only the best has been farmed. When there is more need of farms, some of the poorer land

4. Why so little land is under cultivation

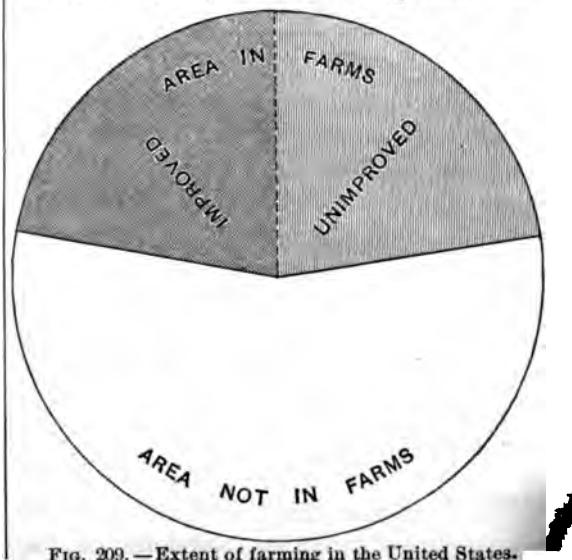


FIG. 209.—Extent of farming in the United States.

will be made to yield crops. There are two great difficulties, however. A large part of the portion of the circle marked *not in farms* represents the arid lands of the Western States. Locate these (p. 145). People will not be eager to receive farms there, even as a gift from the government, until they are able to irrigate them. What is the government now doing to make some of this land more attractive to settlers (p. 147)?

A second reason why much land must remain uncultivated is that there is a

country are furnishing the largest amount of lumber at the present time (pp. 1125, 135, 148)? What portions furnish little or none? Why?

In what sections of the United States is fishing an important industry (pp. 110, 125, 149)? What kinds of fish are caught in the different sections? What cities are extensively engaged in fishing? More persons are employed in this industry in Maryland and Virginia than in any other state. How can you explain that fact (p. 125)? There are only about one hundred and forty-three thousand people engaged in fishing in the country while there are over ten million engaged in farming.

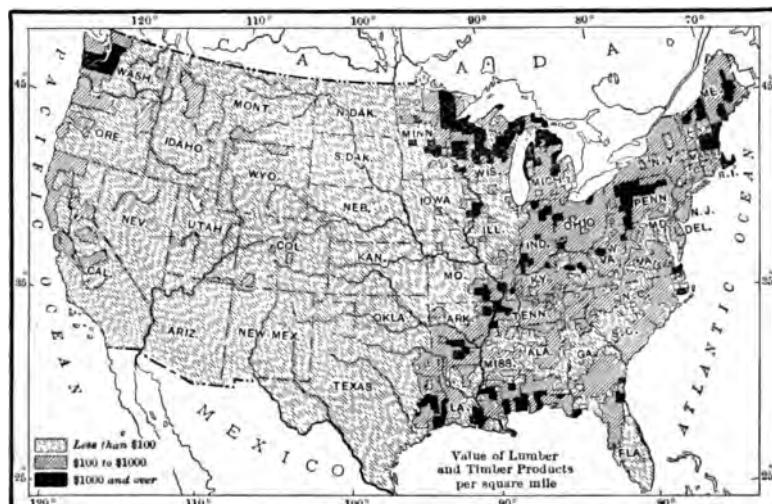


FIG. 210.—Value of lumber and timber products of United States.

great deal of mountainous country. What are the names of our principal mountain systems? Through what states do the Appalachian Mountains extend? The Cordillera? What mountains, besides the Rockies, are included in the Cordillera? Probably most of the mountainous and arid lands never can be cultivated. Why?

The parts of the United States that can supply most lumber are shown in Figure 210. Which sections Lumbering are they, and what states are included? What portions of the

that vicinity? What states produce much soft coal? Why is coal of great importance?

Iron ore is the mineral that ranks second in value. From Figure 211 tell in which states it is chiefly found. Name cities that depend very much upon coal and iron ore for their importance.

Copper ranks third in value. In what state is it mined in large quantities? Which city in Montana is a noted copper-mining center (p. 155)?

Gold ranks next to copper, and then comes silver. In what states are these precious metals chiefly found (p. 150)?

Coal is the most important mineral found in Mining the United States. Of the two main kinds, far more of the bituminous coal is produced than the anthracite. Figure 211 shows where coal is mined. Which state is the anthracite found? What important cities are

What states produce

much soft coal?

Why is coal of

great

importance?



FIG. 211.—Distribution of coal and iron in the United States.

The amount of petroleum produced in the United States each year is valued at more than the gold, and the natural gas at more than the silver. Clay products are worth more than the gold and silver together, and the building stones and cement more than all the gold. Tell what you can about each of these mineral products.

Manufacturing ranks second among the great industries in the number

Manufacturing of persons employed.

In Figure 212 are shown the parts of the country that do a large amount of manufacturing. What sections do most of it?

What can you tell about the manufacturing in the Northeastern States (p. 112)?

In the Southern States (p. 126)? In the Central States (p. 136)?

In the Western States (p. 151)?

The greatest manufacturing industry is that of iron and steel. In what cities

is it chiefly carried on? In what states is there extensive cotton manufacturing? What cities are noted for their flour mills?

Much the greater part of our ocean trade is **Transportation** carried on with Europe. For this purpose good harbors are necessary along our eastern coast. Fortunately, that

coast is well supplied with fine harbors. Name several of them (pp. 116-120 and 128-130).

The Pacific coast has few bays, and in many places the Coast Ranges rise directly from the water's edge. Thus, good harbors are few and widely scattered. There are several excellent ones, however. Name them (p. 152).

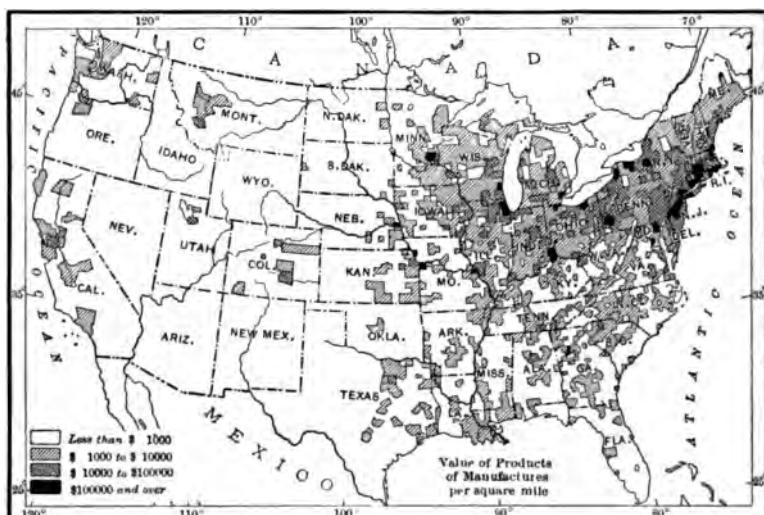


FIG. 212.—Distribution of manufacturing in the United States.

Named in the order of their commerce, the seven principal ocean ports of the

United States are as follows: (1) New York; (2) Galveston; (3) Boston; (4) Philadelphia; (5) New Orleans; (6) Baltimore; (7) San Francisco. Locate each of these. The two Puget Sound ports together rank higher than Baltimore. What are their names?

Most of the rivers of the Northeastern States are not of much value for navi-



FIG. 213.—Map to show the navigable interior water routes of the United States.

gation (Fig. 213). Why (p. 116)? Yet there is one notable exception. Which is it?

Which river in the United States is of greatest importance for navigation? About how long is it (p. 258)? What large tributaries has it? What important cities are located on the main river and its tributaries? In which state is each of these cities?

Of what importance are the Great Lakes for navigation (p. 138)? How are they connected with New York City by water? What important cities are located on these lakes? Trace the water route from Duluth, or Chicago, to New York City.

In what ways will the Panama be of importance to the United (p. 152)?

From Figure 214 what do you know about the number of railroads in the East? In the South? In the Central States? What great railroad centers can you find on this map?

The ten largest cities in the United

States, named in order of their size, are as follows: (1) New York; (2) Chicago; (3) Philadelphia; (4) St. Louis; (5) Boston; (6) Cleveland; (7) Baltimore; (8) Pittsburgh; (9) Detroit; (10) Brooklyn.

Locate each of these cities. Give some reasons why each has been so important.

Name and

other important centers of manufacturing in the Northeastern States; in the Southern States; in the Central States; in the Western States.

Name the dependencies of the United States. Locate each on the map (Fig. 106); on a globe. What important products are furnished by them? What products are raised in large quantities in our country? Give other reasons why these dependencies are of value. Which are in the Torrid Zone?

Write the names of our dependencies, arranging them, as nearly as you can, in the order of their importance.





FIG. 224.
The boundary of Ecuador is in dispute.



of the St. Lawrence River. This water route is of so great importance that the Canadian government has built ship

railways in the more settled parts, including the Grand Trunk line and the Canadian Pacific (Fig. 214).



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FIG. 217.—A steamer going down the Lachine Rapids just above Montreal. It must take the canal around these rapids in going upstream.

canals around the rapids (Fig. 217) in the rivers. Thus, by river, canal, and lake, large vessels can go from the Atlantic Ocean all the way to the western end of Lake Superior.

Canada has an excellent system of

The largest city of Canada is MONTREAL (Fig. 218), on the St. Lawrence River. Large ocean vessels can go up the river to Montreal, but because of rapids (Fig. 217) they can get no

Principal centers of manufacture and commerce

1. On the interior waterways

further. Only lake vessels, and such others as are small enough to pass through the canals, can go above that point. This makes Montreal, like Buffalo, a place where goods must be transferred from one kind of boat to another. It is also a place to which raw products can be easily brought, and

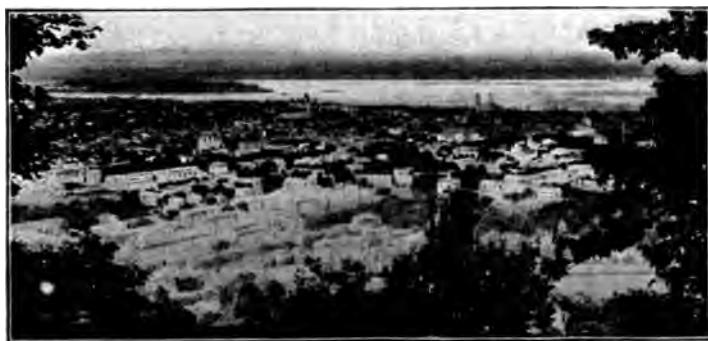


FIG. 218.—A view over the city of Montreal, with the broad St. Lawrence River in the distance.

from which manufactured goods can be shipped. Montreal is, therefore, a very busy city, with much manufacturing and commerce.

A short distance west of Montreal, on the Ottawa River, is the city of OTTAWA, the capital of Canada. It is located at a point on the river where there is a large fall, supplying water power for use in sawmills and other factories.

On the St. Lawrence River below Montreal is QUEBEC, one of the most quaint cities on the continent. It was founded many years ago by the French, and the French language is still in common use there.

Another large city on the great interior waterway is TORONTO, which lies on the northern shore of Lake Ontario, opposite the mouth of the Niagara River. It is a busy manufacturing and shipping center.

On the Atlantic coast are the two seaports of HALIFAX and ST. JOHN,

^{2. Other cities} and on the Pacific coast,

VICTORIA and VANCOUVER.

Locate these cities. Each of them has extensive commerce. WINNIPEG, far in the interior, and away from the Great Lakes waterway, reminds us of Minneapolis, for it is in the midst of the Red River Valley wheat region, and is an important flour-milling center.

(2) Newfoundland

Only one part of the British territory to the north of us has refused to join the Dominion of Canada. This is Newfoundland, including the island by that name and a narrow strip of the Labrador coast.

The capital of the colony is ST. JOHN'S, and the principal industry is fishing. Near the island of Newfoundland, and along the Labrador coast, there are extensive shallows, called **banks**, on which cod, halibut, and other fish live.

To these fishing banks vessels come from Europe, and from the fishing ports of eastern United States and Canada, as well as from Newfoundland.

(3) Greenland

There are a number of islands north of Canada in the Arctic zone. They are, for the most part, desert lands, and almost uninhabited.

Even in summer, floating ice is usually in sight. Some of the ice is that which has formed on the surface of the sea during the winter. There are also much larger masses, called *icebergs* (Fig. 219), which sometimes rise as much as two or three hundred feet above the



FIG. 219.—An iceberg floating in the Arctic Ocean. This huge mass of ice rises nearly two hundred feet above the water.

surface of the water. These icebergs have broken off from the vast masses of ice, called *glaciers*, that move down to the sea from the frozen lands of the North.

Most of the large icebergs come from the immense island of Greenland, which is almost entirely covered by a thick ice sheet. No land can be seen anywhere excepting along the coast, all the rest being buried beneath the vast glacier. A few Eskimos live along the coast, and also a few Europeans, called Danes, who have come from Denmark, a country in Europe which owns Greenland.

2. Mexico, and Other Countries South of Us

- What does Figure 134 tell you about the highlands and lowlands of Mexico? (Notice the rivers.)
- Find the capital of Mexico (Fig. 133).
- In what zones does the country lie?
- Does its coast line suggest few or many good harbors? Why?
- What is the distance across the central part of the country from east to west?
- What

water lies south of Mexico? What land southeast? 7. Name the four largest islands in the West Indies.

(1) *Mexico*

Mexico is about one fourth as large as the United States, and has less than one sixth as many inhabitants. **Area, population, and government** Like the United States, it is an independent country and a republic. It consists of nearly thirty states that form a union similar to ours.



FIG. 220. — Colima, one of the Mexican volcanoes, in eruption. The column of steam and ashes is two or three miles high. The white patch on the side of the mountain is a lava flow.

The Tropic of Cancer crosses Mexico north of its central part, showing that a large portion of the country is in the tropical zone. Yet Mexico has a much cooler climate than this fact suggests. The reason is that much of the country is very high land; and, as you have learned (p. 25), the climate is cooler on such land.

Why much of the country has not a tropical climate

The Cordillera of western States extend into Mexico, are broad plateaus, often over height, crossed by mountains which rise even more than and. Several of the loftiest peaks canoes, made of lava (Fig. 221); some of the peaks are so high are always covered with snow, the fact that they lie in the tropics. From these facts it is plain that the climate of Mexico is tropical in the lowlands near the coast.

There is heavy rainfall on the eastern coast, and in the southern parts, in the central and western parts, on the other hand, the land is drier, and in places desert. This is an extensive arid belt of western United

With such differences in temperature and rainfall, we may expect great variety of products from the soil. A journey from the eastern coast of Mexico to the interior shows this variety. Starting on the lowland, where hot and damp, tropical crops are raised. Here also are dense tropical forests containing such valuable woods as ebony, and mahogany.

Passing up the slopes of the mountains one reaches a cooler climate, where intensive coffee plantations are raised (Fig. 221); and there, also, sugar, cotton, and tobacco are raised. Westward, and higher up on the mountains, only the crops of the warm climate, such as wheat, corn, and beans, are cultivated.

Still farther on, the climate becomes so dry that even these cannot be raised without irrigation. After the



FIG. 227.—A view in the lofty Andes Mountains of Chile. Here the surface is very rough and rocky, and snow remains all the year round.

world are in the temperate zone, but only the smaller part of South America ~~is~~ in that zone, as you can see (Fig. 116). What countries are included in it? Most of the people of South America live either in these countries or else on plateaus and mountain slopes, which, you know, have a cool climate, even though in the tropical zone.

A second reason for the slow settlement is the lack of coal. Some coal is found there, it is true, but very little is mined. The importance of coal for manufacturing has already been seen in our study of the United States. Without that mineral our country would not have developed so many industries, nor have attracted such great numbers of immigrants.

Most of the coast of South America is very straight, so that there are few bays and harbors. Compare North and South America in this respect. The western coast is especially straight, and for long distances there are no harbors at all. Moreover, the lofty Andes rise, like a great wall, almost out of the ocean, so

that it is very difficult to carry goods from the western seacoast to the interior (Fig. 227).

Thus the scarcity of good harbors, as well as the lack of coal, is unfavorable to manufacturing and commerce. Yet these are two occupations that attract and support large numbers of people.

A fourth reason for the small population of South America is the kind of people who live there. All of the continent was once owned by Spain and Portugal, and the languages of these countries are still spoken there, Portuguese being used only in Brazil. Like Mexico and Central America, the South American countries have rebelled, and now all but the Guianas are independent republics.

4. Because of the kind of people there

Some of the people are Spanish or Portuguese, but far more are Negroes, Indians, and half-breeds. More than half of all the South American people can neither read nor write. In some of the countries, too, the people have been very quarrelsome, and have spent much of their time in fighting instead of develop-

Panama (p. 163)? British Honduras is a colony of Great Britain. The others are republics, each having a government and capital of its own.

Neither the countries nor the cities are of much importance. Spanish is the language spoken in all of the inhabitants and products them, and, as in Mexico, the people are mainly Indians, Negroes, and half-breeds.

islands, at some distance from the coast, which form a group, or *archipelago*, called the West Indies.

The four largest islands are sometimes called the *Greater Antilles*. What is the name of each (Fig. 133)? The three groups of islands learned about two of these (p. 160)? A third, Haiti, is divided into two independent Negro republics, while



FIG. 223.—Native women of Jamaica going to market, each with a burro, or small donkey, loaded with baskets of vegetables and fruits.

The main products are tropical fruits (Fig. 222), sugar cane, coffee, and tobacco. Large sections are covered by tropical forests from which valuable hard woods, dyes, and rubber are obtained.

(3) *The West Indies*

Besides the countries on the mainland of the continent, there are numerous

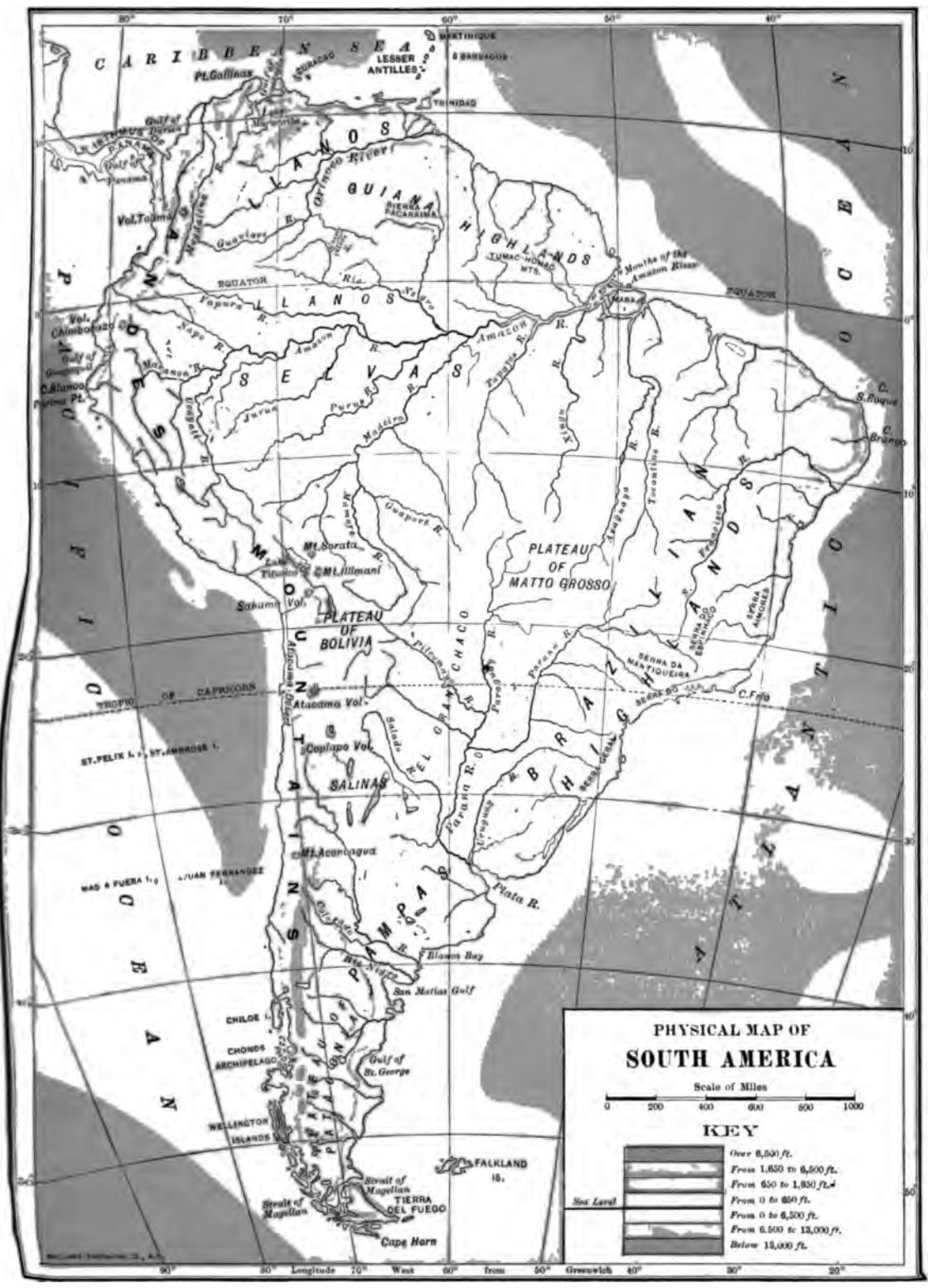
Jamaica, the fourth, is a colony belonging to Great Britain.

North of the Greater Antilles lie a group of low coral islands, called *Bahamas*, which also belong to Great Britain. From Porto Rico southward to South America is a chain of small islands, known as the *Lesser Antilles*, which belong to Great Britain, France, and other countries of Europe.





FIG. 224.
The boundary of Ecuador is in dispute.







EUROPE

Scale of Miles
0 100 200 300 400 500 600
Class and over 1,000,000
Class and over 500,000
Class and over 300,000
Shallow Places
Capitals with less than 200,000
Other Cities

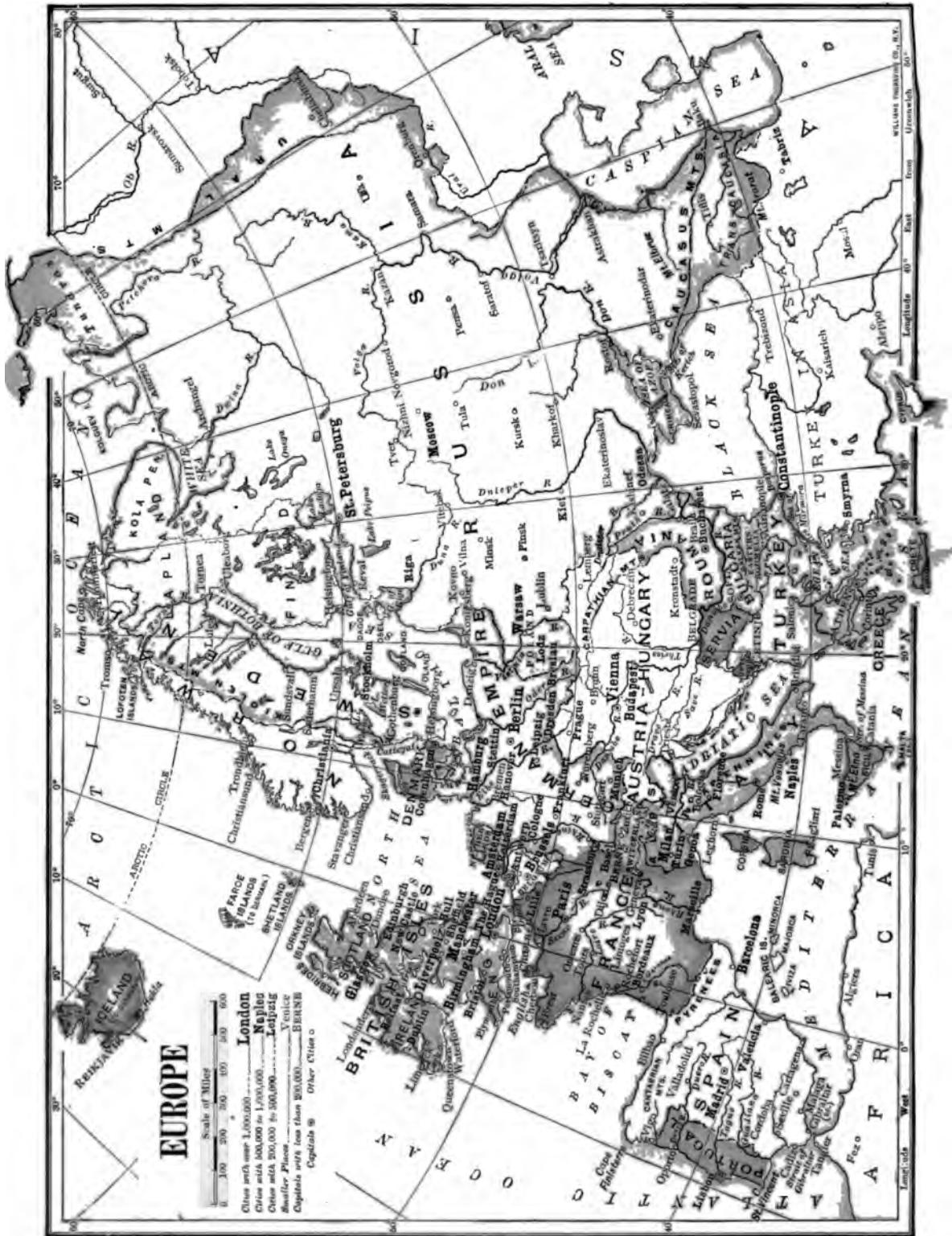




FIG. 233.

ing industries. On account of so much ignorance, and so many rebellions, Europeans have not been so attracted to South America as to North America. Of late, however, there has been great improvement, and some of the countries have developed very rapidly.

1. Argentina, Uruguay, and Paraguay

From what has been said you can, perhaps, pick out the most progressive countries of South America. They lie in the temperate zone.

Argentina, the leading one, is the nation of South America that most re-

Comparison of Argentina with United States minds us of our own. It is only about one third as large as the United States, to be sure, but it has the same variety of climate from east to west. There is plenty of rain in the northeast, while in the interior there are broad stretches of arid plains. From north to south there is a great difference in temperature, even greater than in our country. As in the United States, much of Argentina consists of plains, with lofty mountains in the west.

Argentina is one of the greatest wheat-producing countries in the world, and other grains are common. In the north

Its products the climate is so warm that tobacco, sugar cane, cotton, and tropical fruits are raised.

On the treeless plains of the interior, called *pampas*, there is excellent grass, and one of the chief industries there is cattle and sheep raising. This reminds us of the arid parts of western United States. Argentina is also one of the leading cattle and sheep countries of the world.

Paraguay and Uruguay have much the same products as Argentina, being especially noted for their **Paraguay and cattle and sheep**. Paraguay **Uruguay** also has a number of tropical products, as you might expect. Why?

The Parana River and its tributaries form excellent highways for commerce with the interior, as do the Mississippi and its tributaries **Transportation and centers of commerce** in North America. BUENOS AIRES, at its mouth, is the largest city in South America, having over a million inhabitants. MONTEVIDEO, in Uruguay, is about the size of Pittsburgh.

Both of these cities are important seaports, exporting the products of the region to Europe and North America. Buenos Aires is a busy, modern city, with many fine buildings, quite like some of our best American cities. It has much manufacturing as well as commerce.

2. Brazil

Brazil is the one country in South America that formerly belonged to Portugal, and the Portuguese language is still spoken there.

It is a much larger country than Argentina, being even larger than the United States. Yet it has **Area and population** less than one fifth as many inhabitants as our country, and of these, less than one half are white men.

A large part of Brazil, including much of the valley of the Amazon and its tributaries, is covered with dense tropical forests, through which one can scarcely make his way without first cutting a path. Few people except Indians live here, and, although large boats can go far up the Amazon and its tribu-

taries, there is not a single large city in this entire valley. How different it is in the valley of the Mississippi!

The Indians live mainly by hunting and fishing, or by picking the tropical fruits from the trees and bushes. The rubber tree grows



FIG. 228.—A view of the city and harbor of Rio de Janeiro.

in the tropical forest, and also the cocoa tree, from whose seed chocolate is made. Great quantities of rubber are shipped from PARA, at the mouth of the Amazon.

Most of the inhabitants of Brazil live in the eastern and southern parts.

The more settled part and its products Much of this section is a plateau, crossed by low mountains. Because of the elevation the temperature is much more agreeable than in the Amazon Valley; and, as you will see from the map, the very southern portion lies in the temperate zone.

The chief industry is farming. Besides grain, the crops of the warm temperate and tropical climates thrive, especially tropical fruits, cotton, sugar cane, tobacco, and coffee. The last is most important. Many cattle are raised.

Valuable minerals, including gold, diamonds, and some coal, are found in

the plateau region of Brazil. Indeed, this is one of the principal diamond-producing countries in the world. Manufacturing is rapidly developing in eastern and southern Brazil.

The most important cities are on the coast, by far the largest being RIO DE JANEIRO, the capital ^{Centers of commerce} (Fig. 228). SÃO PAULO, which lies to the southwest, back from the coast, is second in size among the cities of Brazil. BAHIA and PERNAMBUCO, farther north on the coast, are third and fourth. Rio de Janeiro is the second city in size in South America. Which is the first? It has a splendid harbor, and is a very

busy seaport.

3. The Andean Countries

The countries in the western part of South America are very mountainous,



FIG. 229.—A group of llamas, the beasts of burden of the lofty Andes.

for the Andes rise from the seacoast and extend all the way from Panama to Cape Horn. Which Andes Moun-
Facts about the
tains
country stretches fully half of this distance? Which is next longest?

Although these mountains are not so broad as the Cordillera of North America, they form one of the longest and highest mountain chains in the world. The loftiest peak is Aconcagua in Argentina, which rises 22,860 feet above sea level. The loftiest in North America is Mt. McKinley in Alaska, which is almost half a mile lower (20,460 ft.), or about the height of Mt. Chimborazo in Ecuador.

These lofty mountains are even now growing higher. Now and then, as they are slowly pushed upward, the rocks break apart and severe earthquakes result. This region has been visited by some of the most terrible earthquakes in the world's history, destroying many lives and buildings. Besides that, some of the

temperate zone, as Argentina does. Which one is it? You will readily understand, therefore, why Chile is the ^{The leading} most progressive country on ^{country and} the west coast. How long ^{its products} is this country? About how wide?

Although it is so long and narrow, and so mountainous, Chile has much good farm land. The crops range from the grains of the cold temperate climate to the products of the tropical zone. There is also much grazing land. The cool climate of the southern part is favorable to work, and the people of Chile, like those of Argentina, are engaged in various kinds of manufacturing.

Name the other countries in western South America. Which has sea-coast on both ^{Other coun-} ~~the~~ ^{tries and the} oceans? Which products has no seacoast? Which is crossed by the equator? (*Ecuador* is a Spanish word for equator.) Which countries in South America lie entirely in the tropical

zone? Which lie partly in this zone?

In southern Peru and northern Chile, the climate is so arid that there are extensive deserts; but elsewhere an abundance of rain falls. There are also great differences in temperature. For example, in central Peru the lower lands, near the coast, are very hot and damp; but as one climbs the mountain slopes, it rapidly becomes cooler. Only tropical plants grow near the coast, producing tropical woods, rubber, cocoa, coffee, and sugar; but grains and other crops of temperate climates are raised higher up the mountain sides.

FIG. 230.—A view of Arequipa in Peru, at the base of one of the volcanic cones of the Andes.

highest peaks are volcanoes (Fig. 230) from which lava and ash are at times sent forth.

Rich deposits of precious metal were found in the Andes soon after the discovery of South America, and this was the principal reason why the Spaniards took possession of so much of the continent. Hundreds of millions of dollars' worth of gold and silver have been taken out of the rocks of the Andean chain, and every year large quantities are still mined.

You will notice that one of the Andean countries lies mainly in the south tem-



Chile is the leading Andean country. It is natural that it should have the largest city on the Pacific coast. SANTIAGO is that being the capital of Chile, and having a population of one third of a million. Located fifty miles inland, and half a mile above the level of the sea. VALPARAISO, the largest and busiest port on the Pacific coast, is also in Chile. It is half the size of Santiago. Name the principal cities and chief seaports of the Andean countries.

Venezuela and Guiana

of Brazil is Venezuela, which has most of the Orinoco Valley. It has broad plains, called *llanos*, which have excellent grass, so that raising is one of the leading industries. Coffee and cocoa are raised. Tropical woods grow, as well as minerals, and other products of this country. What is the capital?

orth of the mouth of the Essequibo River is Trinidad Island, belonging to Great Britain. On this island is a pitch lake, from which asphalt used in our streets is obtained. The island is divided into three parts, colonies of three nations of Venezuela. What are the names of the islands? What are the names of the islands that own them? The products of these islands are similar to those of Venezuela.

pare North and South America in regard to population. 2. Why might South America have been expected to have been settled as rapidly as North America? 3. Give several reasons why it has not been settled so rapidly. Compare Argentina with the United States in regard to sea, climate, and surface features.

5. What are its principal products? 6. What are the conveniences for transportation? 7. What large cities are located here? 8. Tell about Paraguay and Uruguay. 9. Compare Brazil with the United States in area and population. 10. Give some facts about the tropical forest and its products. 11. About the more settled part and its products. 12. Name and locate the chief centers of commerce. 13. What can you tell about the Andes Mountains? 14. About their minerals? 15. Name the leading Andean country and its products. 16. What about the other Andean countries and their products? 17. Name and locate the principal cities in western South America. 18. State some facts about Venezuela. 19. About Trinidad Island. 20. Guiana.

1. Make a sand model of South America, showing the highlands and lowlands. 2. Read about Pizarro's conquest of Peru. 3. Find out something about the Inca Indians. 4. What are the five leading



FIG. 231.—Native women of Venezuela washing clothes along the water front.

cities of South America? 5. Compare South America with North America in regard to distance from Europe. Which has the advantage in this respect for immigration? 6. Will the Panama Canal be of importance to us in our trade with any part of South America? Examine a globe to see. 7. If the southern end of Chile were placed at San Diego in California, where in North America would the northern end reach? 8. Draw an outline map of South America, putting in the mountain ranges, chief

There are large numbers of horses and cattle, and still greater numbers of sheep. There are almost as many sheep in the British Isles as there are people, and in Scotland there are five times as many. These animals, of course, supply many important products, such as milk, butter, meat, hides, and wool. Yet far too little food is produced in these islands to feed the people.

States and Germany, produce more iron ore. There are also clays, building stones, and other valuable minerals.

With plenty of coal and iron, Great Britain has become one of the leading iron and steel manufacturing ^{Manufacturing} centers in the world. The ^{1. Iron and steel goods} products of the factories are used not only at home, but are sent abroad in great quantities.



FIG. 237. - Shipping in the busy harbor of Glasgow.

There is almost no lumbering, for there is scarcely any forest except that in parks. Almost all the wood used in the British Isles has to be brought from abroad.

Lumbering and fishing Fishing is a very important industry along the coast, and on the fishing banks, where fish are abundant. These salt-water fish are much used as food by the British people.

The key to the greatness of these islands is found largely in the minerals that lie buried in the rocks.

Mining The most valuable of these are coal and iron ore, which are widely scattered. The United Kingdom is the second greatest coal-producing country in the world, ranking next to the United States. Only two nations, the United

The leading center for the manufacture of iron and steel is BIRMINGHAM, in England. The next center is in and near Glasgow, in Scotland. The two cities, GLASGOW (Fig. 237) and EDINBURGH, lie in the *Lowlands of Scotland*, a fertile agricultural region, rich in coal and iron. Glasgow is the principal city for steel shipbuilding in the world. Coal and iron from England and Scotland are easily sent by boat across the Irish Sea to the coast of Ireland. Largely for this reason the city of BELFAST is also noted for its iron manufacturing, especially for shipbuilding.

The United Kingdom is noted for many other kinds of manufacturing

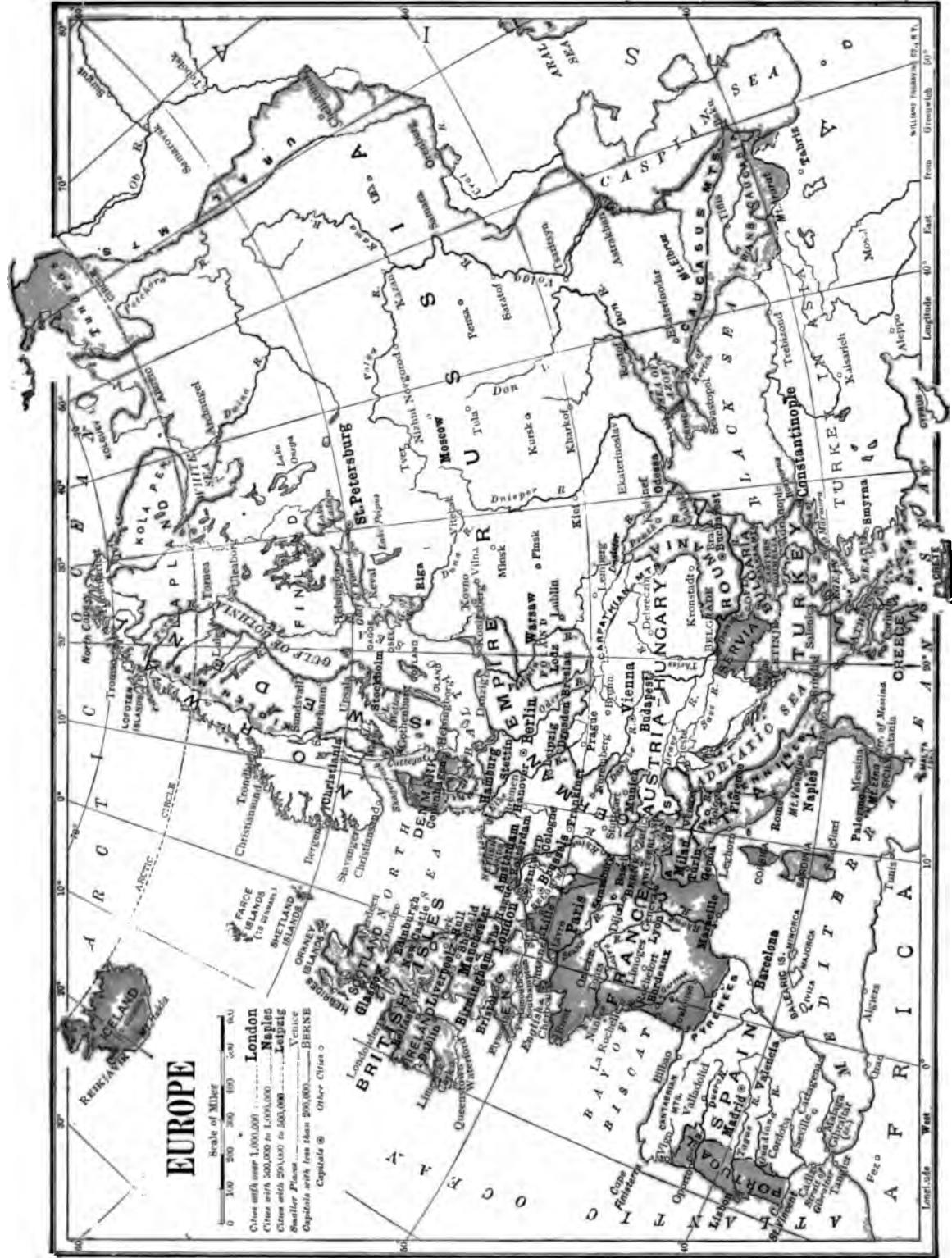


FIG. 332.



FIG. 239.—St. Paul's Cathedral, London, from the Thames.



Wool, for example, is made into woolen cloth; and cotton, imported from the ~~woolen and cotton goods~~ United States, and other parts of the world, is manufactured into cotton goods.

The center for this work is MANCHESTER, together with a number of smaller cities near by. LIVERPOOL, on the western seacoast, about thirty-five miles from Manchester, is the seaport for this region, and is itself a great manufacturing city.

The largest city in Ireland, BELFAST, is noted for its linen manufacture. The ~~Linen~~ linen is made of flax that thrives in the cool, damp climate of the Emerald Isle. DUBLIN, the capital of Ireland, also has important manufactures.

Great numbers of people are employed in all this manufacturing. They produce so much cloth, steel, and iron goods, and so many other articles, that the British people could not possibly use all of them. They must find a market for them in other countries.

On the other hand, it is necessary for the British people to import much of the food that they eat. It is impossible to raise it all on these two small islands, just as it would be impossible to raise enough for the people of a city within the city limits. Besides food they must also import much wool, cotton, and other raw products for manufacturing.

The export of so many goods, and the import of so many others, gives rise to an enormous amount of trade, and makes the transportation of goods of the greatest importance. Partly for these reasons the United Kingdom has more ships than any other nation in the world,

and they sail to every important port on the earth.

Having many ships, it has been easy for the British people to explore all parts of the earth. Also, having British colonies to sell so many goods abroad, and to buy so much food abroad, it has been natural for the British nation to take possession of newly discovered lands.

In this way the United Kingdom has come into possession of Canada, Australia, India, several large countries in Africa, and scores of islands and smaller possessions. These are called colonies, and the British have more of them than any other nation in the world. You will remember that our own country was an English colony before our War for Independence.

The British colonies cover one hundred times as much surface as the British Isles themselves, and have nine times as many inhabitants. These colonies help greatly to make the United Kingdom a World Power, both by their trade, and by their support in times of danger.

The commerce of the United Kingdom is centered largely in the principal seaports, especially LONDON, LIVERPOOL, and GLASGOW.

London, the largest city in the world, is situated on the short Thames River, as far up as ocean vessels can go. It is the capital of the country, is engaged in manufacturing of almost every kind, and has the most important shipping interests of any city in the Kingdom.

Locate Liverpool, Glasgow, Edinburgh, Birmingham, and Manchester. What has been said about each? Name the two principal cities of Ireland. For what is each important?

colony. Europe is the mother continent for other parts of the world, also, as you will learn later.

While Europe is the *mother* continent for much of the world, she is also the **2. The teacher of the world** *teacher* of most of it. Her children, who are scattered over the New World and elsewhere, naturally look to her for instruction. Other

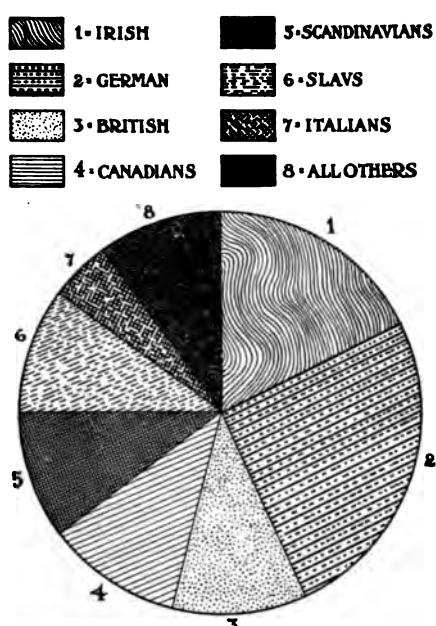


FIG. 235.—A comparison of the foreign-born residents of the United States, according to the nations from which they come. In this figure the space marked 1 represents the native-born Irish living in the United States in 1900; the space marked 2 represents the Germans, etc.

parts of the world, such as China and Japan, look to her, too.

The countries of Europe, being so much older and so much more progressive than many other countries, have long taken the lead in discovering the best ways of carrying on agriculture, mining, manufacturing, and commerce. Most of the best books, also, and of the best music, paintings, and sculpture have come from Europe. For these reasons

people from all parts of the world look to Europe for the best thoughts on most subjects, and they often go there to study.

Some of the countries of Europe have been far more active than others as world leaders. There are **Europe's six** that are now especially **World Powers** prominent; namely, The British Isles, Germany, France, Italy, Austria-Hungary, and Russia. Locate each of these.

They are called the *Great Powers of Europe*, because they are the most powerful countries on that continent. They are also known as *World Powers*, because they are among the most powerful nations of the world. The United States and Japan are the only other World Powers. The remaining countries of Europe are called the *Lesser Powers*.

2. The Great Powers of Europe

(1) *The British Isles*

Of all the European countries, the one most nearly related to us is the *United Kingdom* of Great Britain and Ireland. It is from truly our **mother country** these two islands, called the *British Isles*, that we have obtained our English language; and from them, too, a larger number of settlers have come to our shores than from any other country in the world (Fig. 235). Moreover, we carry on more commerce with the United Kingdom than with any other nation.

While, therefore, many of the European countries have some claim to be called mother countries to us,—since they have sent so many settlers here,—the United Kingdom is most truly of all our *Mother Country*.



FIG. 236. — Sheep grazing in a pasture in England.

The United Kingdom consists of two islands, *Great Britain* and *Ireland*. The ^{The smallness of this kingdom} larger of these, Great Britain, is made up of three parts — *England*, *Scotland*, and *Wales*. The two islands together are much smaller than our one state of California, but there are nearly half as many people living in them as live in the entire United States. This shows that the British Isles are very densely settled.

Notwithstanding its small size, the United Kingdom is in many respects ^{Its importance} the most powerful and the most important country in the world. It carries on more foreign commerce than any other nation; it has more and larger colonies; and in it is London, the largest city in the world.

There are, of course, excellent reasons why so small a country should have become so important. Let us see what they are.

It is certainly not agriculture that ^{Why agriculture is not especially important} has given the United Kingdom its rank. Indeed, in so small a country, one would hardly expect it to be. Even aside from

its size, however, there are two reasons why agriculture is not of great importance here. In the first place, much of the land is too hilly and rocky for farming. In the second place, the islands are so far north that the summer climate is too cool. It is too cool even for wheat raising in the larger part of the two islands. Indian corn cannot be grown in any part, nor is grape culture general. Of course, then, such products as cotton, tobacco, and sugar cane are quite out of the question.

However, it is possible to raise the grains and vegetables of cool temperate climates, such as oats, barley, cabbages, turnips, and potatoes. ^{The farm products} Another crop that thrives here is grass. The winds come mainly from the west, causing a damp climate; and since they blow from the warm ocean, the winters are not severe. Therefore, grass remains green throughout most of the year. It is because of its green grass that Ireland is often called the green, or Emerald Isle.

Largely on account of the fine grass, the principal agricultural industry of the British Isles is grazing (Fig. 236).

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FIG. 238. — *Loch Achray*, in the Scottish Highlands.





FIG. 239.—St. Paul's Cathedral, London, from the Thames

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The British Empire and its form of government Great Britain and Ireland, together with the colonies, form the *British Empire*. Its government, unlike our own, is a monarchy, and the name of the present king is George V (Fig. 240). This is not an absolute monarchy, however, for the people have an important share in making the laws, as in our own country. They elect representatives to

Parliament, which corresponds to our Congress at Wash-



FIG. 240.—George V, King of England.

ington, and meets in London (Fig. 241).

(2) German Empire

Until the year 1871, the country marked *Form of government* *German Empire* on the map was divided among a large number of small independent governments. In that year they all united to form the German Empire. The government is a monarchy, the

present ruler, called the *Kaiser*, being Emperor William II (Fig. 242).



FIG. 241.—The Parliament building in London, with the Thames River in front.

Why agriculture is prominent here Germany is a better agricultural country than the United Kingdom, for two reasons. In the first place there is a much larger area of level land. The northern half of the country is a plain, and although the southern half is hilly, and in places mountainous, there is much good farming land there.



FIG. 242.—William II, the Emperor of Germany.

The second reason is the warmer summer climate in a part of Germany, for Germany lies farther from the sea than the British Isles, and a part of it is also farther south. A large portion of the Empire is south of the southern part of England, and no portion extends so far north as northern England.

Among the chief farm products are

rye, oats, barley, and wheat. Little corn is raised, but potatoes, **Farm products** which were introduced into Europe from America, are a very valuable crop.

The Germans have so improved the beet as to produce the new kind, known as the *sugar beet*, from which sugar is made. Hops, used in the manufacture of beer, and grapes for use in making wine, are grown in great quantities (Fig. 243). There is also much graz-



FIG. 243.—German peasants carrying grapes from a vineyard.

ing, especially on the poorer soils and uplands, and there are great numbers of cattle, sheep, hogs, and goats.

There is much more forest land in Germany than in Great Britain, about one fourth of the Empire being wooded. The Germans take great care of their **Lumbering and fishing** forests, and even plant trees on land that is not especially valuable for farming. When wood is needed, certain trees are selected for cutting, while the others are left to grow. Such care of the forests is called *forestry*, and the forest lands of Germany are as carefully attended to as are many farms. The Germans are the leading foresters of the world.

Along the seacoast there is much fishing, but this is less important than the other industries.

As in Great Britain, minerals are among the leading resources of this **Mining and manufacturing** country. Coal beds exist at several points, and there are also valuable deposits of iron ore, gold, silver, copper, lead, zinc, salt, and other minerals.

With abundant coal and iron ore, Germany has become a great manufac-

she must import all of her cotton, much of her wool, and much of her food. What countries that you have studied might send these products to Germany?

Like the United Kingdom, Germany has important colonies, although they are not nearly so extensive as the British colonies. Her trade with these colonies, which are mainly in Africa, is of considerable value; but commerce with other countries is far more important.



FIG. 244.—The Rhine River in Germany. Notice the castle perched on the hilltop on the left, and the vineyard in the front of the picture.

ing country, making all kinds of iron and steel goods, as well as woolen, cotton, and linen goods. There are many other kinds of manufacturing, such as the making of sugar from sugar beets, the brewing of beer, and the manufacture of wine from grapes. Germany ranks next to Great Britain among the manufacturing countries of Europe.

Germany exports a great amount of **Commerce** sugar, wine, beer, textile goods, and iron and steel goods. Like Great Britain, however,

Elbe River. of Hamburg, is another im-

HAMBURG, on the **BREMEN**, west **Great centers of population** port. Why are these cities more favorably situated than those farther east on the Baltic Sea? There is now a ship canal across the peninsula south of Denmark. How is that an advantage to Germany?

There are many other large cities in Germany. The greatest of all is **BERLIN**, the capital and largest city of the Empire. Here are located the palaces of the Emperor and many government

For transportation of goods from one part of the Empire to another, Germany is greatly favored by her rivers. From the map, you will see that the principal ones flow northward. What rivers do you find? Trace their courses.

Navigation is possible upon all of these, but it is most extensive on the Rhine (Fig. 244). Boats can ascend this stream all the way from the sea to the boundary of Switzerland. How far is that? You can see how very important this must be in carrying goods across the Empire.

buildings. Berlin has also many museums, noted picture galleries, and a large university. In addition, it is a great manufacturing center.



FIG. 245.—A street in Frankfurt, with quaint old German houses.

LEIPZIG is well known for its trade in books, while DRESDEN and MUNICH, like Berlin, have wonderful collections of pictures. The schools, universities, and museums of Germany are among the best in the world, and many Americans go there each year to study. COLOGNE has an old cathedral of note, and FRANKFURT is an important center of commerce. Locate each of these cities on the map.

(3) France

France is one of the few countries in Europe, and the only large one, that has its form of a republican form of government. For many centuries it was a monarchy, but now the people elect a president and representatives, just as we do. The President of the Republic from January 1906 to 1913 was Armand Fallières (Fig. 246).

Agriculture By looking at the map, 1. Comparison with England and Germany you will see that France lies farther south than England, and that fully half of it lies farther south than the southern part

of Germany. Its climate is therefore warmer than that of either of those countries, and this makes it possible to produce a greater variety of crops. Farming is especially favored, too, by the fact that a large part of the surface is made up of plains.

One of the principal products is wheat (Fig. 247), which can be raised throughout the entire country. All the other crops of Germany can also be produced in France. Name several. France is even more noted than Germany for its grapes, which can be grown everywhere except in the northern

third of the country. One of the principal grape-producing districts is that about BORDEAUX.



FIG. 246.—Armand Fallières, President of France.

In southern France there is an industry that we have not studied before; namely, the production of raw silk. This valuable substance is obtained from cocoons spun by a caterpillar, called the silkworm. Each of the cocoons is made of a fine, silky thread several thousand yards long, looking somewhat like the thread in a spider's web.

The silk industry, therefore, depends upon these worms, and much care must be given to them. Their principal food is the leaf of the

much iron ore in France as in these other countries, although there is some.

For these reasons the manufacture of iron goods is far less extensive in France than in Germany **Manufacturing** and Great Britain.

There is, however, much textile manufacturing, one of the principal kinds being silk making. After the cocoons

have been softened in hot water, the threads are unwound, and then wound upon spools. They are later made into silk thread, which is then woven into cloth, ribbons, and other silk goods.

The manufacture of silk goods is one of the principal industries of France, and the products of the silk factories are sent to all parts of the world. The center of the

industry is LYON, the leading silk-manufacturing city in the world.

Other textiles made in France are linen, cotton, and woolen goods. The French are very skillful and artistic people, and the French cloths are among the finest that are made. The making of shoes, gloves, wine, and beet sugar are also important industries.

France exports large quantities of textile goods, wine, and leather goods. She imports coal, iron, wool, cotton, raw silk, and many articles of food. Thus she has a very extensive commerce with foreign countries. The republic has a number of colonies — mainly in Africa and Asia — whose combined area is many times that of France itself. As is the case with



FIG. 247.—A scene in a wheat field in central France. Notice that the women, as well as the men, work in the field.

mulberry tree, which is cultivated in large groves in the Rhone Valley. The leaves are plucked from the trees and fed to the silkworms; and when these caterpillars reach the right stage, they spin the cocoons which are of so much value.

Neither lumbering nor fishing is of very great importance in France. Yet, **Lumbering** as in Germany, the French **and fishing** carry on forestry on the poorer lands. There is some fishing along the coast, and many vessels go to the fishing banks of the North Sea.

There is some coal, especially near the boundary of Belgium, but France has no such important coal beds as **Mining** are found in both Germany and England. It is necessary, therefore, to import some from Germany, Belgium, and Great Britain. Neither is there so

the United Kingdom, these colonies greatly increase the trade of France.

For the transportation of goods abroad, France has the advantage of facing both the Atlantic Ocean and the Mediterranean Sea; and there are good seaports on both coasts. What ports do you find on the map? What rivers connect these

been dredged so that small ocean vessels can ascend it as far as Paris, while still smaller boats can go much farther up the river.

Paris is, perhaps, the most beautiful city in the world (Fig. 248), with magnificent avenues and buildings. It has noted picture galleries and museums,



FIG. 248.—A view along the finest street of Paris.

ports with the interior? Trace each. Boats pass freely up these rivers, except the Loire, which is too shallow for navigation.

The largest and most important city in France is PARIS, on the Seine River. Great centers of population It is the capital of France and the third city in size in the world. What two are larger (pp. 118 and 191)? As in other large cities, there is much manufacturing here. Its seaport is HAVRE; but the Seine has

and many foreigners go there to study painting, music, architecture, and other subjects.

The leading seaport of France is MARSEILLE, the second city in size in the country. It has especially important trade with the countries bordering the Mediterranean, including Algeria and Tunis, in northern Africa, which are French colonies. It is the port for LYON, the third city in size in France. BORDEAUX, on the Garonne River, in the

WORLD GEOGRAPHY

, silver, copper, lead, and quicksilver; since there is little coal, manufacturing and mining is not highly developed. Another reason for the small amount of manufacturing is the fact that many of the people are not progressive, and lack skill in handling machinery. Most of the manufacturing is carried on near the German border, where the people are like the Germans, and where it is possible to obtain coal from Germany.



FIG. 257.—A view of the Danube River at Budapest.

A third reason for the small amount of manufacturing is the difficulty of transporting goods. You will notice that Austria-Hungary has no coast line on the Atlantic Ocean. The strip of coast along the Adriatic Sea is far away from the Atlantic, and is separated from the interior of the country by mountains that are difficult to cross. It is true that the central part of the country can be reached by river boats, for the Danube River crosses Austria-Hungary in its course to the Black Sea. Goods from the Atlantic Ocean can reach Vienna, therefore, by being carried to the Black Sea from the Mediterranean, and thence up the Danube. However, this is a very roundabout route. Trace it on the map.

For all these reasons Austria-Hungary has little foreign commerce, and a large part of what it has is carried on through German ports. From these facts can you see some reasons why "colonies?"

By far the largest city is VIENNA, the fourth in size in Europe; only London, Paris, and Berlin are larger. It is the capital of Austria, a manufacturing center, and a beautiful city, being often classed with Paris in this respect.

BUDAPEST (Fig. 257), the capital of Hungary, farther down the Danube, is less than half the size of Vienna. Like Minneapolis, it is surrounded by wheat farms and is a noted flour-milling center.

PRAGUE, in the northwest, near Germany, is the principal manufacturing city. The chief seaport is TRIESTE, at the head of the Adriatic. Look in the table on page 258 to find how it compares in size with Liverpool, Hamburg, Genoa, and other seaports already studied. Can you give reasons for its small size?

(6) Russia

Russia is larger than all the other countries of Europe combined, but only about one-half the size of the United States. Its population, however, is considerably larger than ours, and about twice that of any other European country.

The Ural Mountains form a part of the eastern boundary of European Russia. The Russian Empire, however, extends thousands of miles farther east, reaching across Asia even to the Pacific Ocean. The part of the Empire beyond the Urals is called Siberia. Including Siberia, and other Russian possessions in Asia, the area of the whole Empire is greater than that of all North America. Only the European part is now to be studied.

The government of Russia is different from any thus far studied. France is a

FIG. 250. — The castle of St. Angelo, one of the ancient buildings of Rome.



rice. Where in eastern United States are these crops produced (pp. 123, 124)? How much farther south is that? **Agricultural products** The mulberry tree thrives here as in France, and silk culture is one of the leading industries. Besides these special crops, wheat, maize, vegetables, grapes, and olives are grown in large quantities; and many cattle, sheep, and goats are raised, as well as much poultry.

The capital of the kingdom is **ROME**, a city not quite so large as Detroit.

Centers of population In it are the palace of the king, and many government buildings. Here also resides the Pope, the head of the Roman Catholic Church. He lives in a palace, called the Vatican, close by the great St. Peter's Cathedral.

Although Italy still ranks as one of the World Powers, there was a time when this peninsula was far more important, in comparison with other countries, than at present. Nearly two thousand years ago, for instance, at the time of Christ, the city of Rome was the center of the mighty Roman Empire, which controlled most of the world that was then known.

Rome was much larger then, and had many magnificent buildings and works of art. For hundreds of years after that, these buildings were allowed to decay; some were destroyed during the wars, and most of them became ruins, or were covered up entirely by sand, dust, and débris of various kinds. Recently, however, the débris has been dug away from around them, and parts of them can now be seen as they stood when Julius Caesar lived there (Fig. 252). These ruins are among the most interesting sights in the city.

The largest city in Italy to-day is **NAPLES**, at the head of the beautiful Bay of Naples, and near the foot of Mount Vesuvius. **2. Naples** There is much shipping from this port, which is situated in the midst of a very fertile farming region.

Mount Vesuvius can be plainly seen from Naples, and when it is in eruption, ashes hurled from it often settle in the streets of the city. Over eighteen hundred years ago, there was a terrible eruption of Vesuvius, during which vast quantities of ashes were thrown into the air. Settling on the surrounding country, the ashes formed a layer deep enough to bury towns near the slopes of the volcano.



FIG. 252.—Ruins of some of the fine old buildings of ancient Rome, which for centuries were buried beneath rubbish.

Among these was **POMPEII**, which was completely destroyed. The ashes have been dug away from much of this city, and now one can see the streets just as they formerly were, (Fig. 253). The houses also are partly preserved, and, in some cases, even the decorations on their walls.

FLORENCE, northwest of Rome, is noted for its fine picture galleries and other works of art. Farther **3. Cities of northern Italy** north, on the western coast, is **GENOA**, the chief seaport of Italy.

It was here that Christopher Columbus was born. In the Po Valley are MILAN and TURIN, both important manufac-

(5) Austria-Hungary

This Empire is larger than any other country in Europe except Russia; yet Area and parts it is not so of the country large as our state of Texas. It is made up of two main parts: (1) *Austria*, on the west, where many of the people are of the same race as the Germans, and where German is the principal language; and (2) *Hungary*, where entirely different languages are spoken, and



FIG. 253.—A general view of Pompeii, which was buried beneath ashes erupted from Vesuvius (seen in the background) over eighteen hundred years ago. During the last century the ashes were dug away, so that one can now walk around among the ruins of the buildings and through the streets.

ing centers. Milan is further noted for its beautiful cathedral.

An especially interesting city is VENICE, at the head of the Adriatic Sea. It is built upon a marsh, being surrounded by water and having canals for streets. Instead of driving about the city, one rides in boats, called *gondolas* (Fig. 254), which also serve to carry goods from point to point. Many bridges cross the canals, while footpaths extend along their margins, so that one can walk about if he chooses; but there are no wagon roads nor horses.



FIG. 254.—A gondola on one of the canals in Venice.

where the people are of very different races, some having come from Asia.

Austria and Hungary are united to form a monarchy under a single ruler;

yet each is independent of the other in Government some respects, and each has its own capital. The present emperor is Francis Joseph I (Fig. 255).



FIG. 255.—Francis Joseph, Emperor of Austria-Hungary.

As you can see from the map, Austria-Hungary is Agriculture in the same and lumbering latitude as southern Germany and northern Italy. The climate is therefore about the same as in those countries. Trace the boundary of the Empire.

As in Italy, a large part of Austria-Hungary is mountainous (Fig. 256). Notice on the map that the Alps extend into this country; also that mountain ranges branch from the eastern end of the Alps southeast toward

Turkey. Still other ranges, called the Carpathian Mountains, swing along the northern and eastern boundary of the Empire. Yet, again as in Italy, there are many fertile valleys in this mountainous country, and agriculture is by far the most important occupation.

The best farming section is the vast plain in the middle part, inclosed by mountains. This is one of the principal grain-producing sections of Europe. Among the products of Austria-Hungary are silk, and the crops that were found in Germany and northern Italy. Name several of these crops. There is also much grazing land on the mountain slopes.

A large part of the land is too rough and mountainous for either farming or grazing (Fig. 256). On that account there is more forest than in any of the other European countries we have studied.

There are many valuable minerals in the mountain rocks, including iron,



FIG. 256.—A street in Innsbruck in Austria, with the snow-covered Alps rising steeply in the distance

gold, silver, copper, lead, and quicksilver; but since there is little coal, manufacturing is not highly developed. Another reason for the small amount of manufacturing is the fact that many of the people are not progressive, and lack skill in handling machinery. Most of the manufacturing is carried on near the German border, where the people are like the Germans, and where it is possible to obtain coal from Germany.



FIG. 257.—A view of the Danube River at Budapest.

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The government of Russia is different from any thus far studied. France is a

republic, and the four other Great Powers of Europe are called *limited monarchies*; but the Russian government is an *absolute monarchy*, or *despotism*. This means that the ruler, who is called the *Czar*, can do more nearly as he pleases than can the other rulers of Europe. The name of the present Czar is Nicholas II (Fig. 258).



FIG. 258.—Nicholas II, Czar of Russia.

In recent years the people have been allowed to elect representatives to the *Duma*, which somewhat resembles our Congress. Yet even in the *Duma*, the representatives are not free to speak and vote as they choose.

Russia is chiefly an agricultural country. As in the United States, the great *Advantages for agriculture* variety of temperature is an advantage for agriculture, for it makes many different crops possible. Observe on Figure 232 that Russia extends almost as far south as Italy does, while in the north it reaches into

the Arctic zone. About how many miles is it from the most southern to the most northern point?

It is a very level country, too, with much fertile soil. While there are mountains along a part of the boundary, Russia is mainly a vast plain, like the plains of the Mississippi Valley.

In some parts of Russia the climate is unsuited to agriculture. In the northern part, for instance, the plains, called *tundras*, are always frozen. Even *Sections unsuited to agriculture* in summer they thaw out only at the surface, and trees cannot grow upon them. Mosses and grasses are the chief plants there, and the reindeer, which feeds upon them, is the principal domestic animal (Fig. 259). It is the main support of the few people who live on the tundras.

Southeastern Russia, on the other hand, is too dry for agriculture without irrigation. This is the region of the *steppes*, which resemble the arid lands in our Western States; here grazing is the leading industry.

In central and southern Russia wheat, rye, oats, and other grains are common. Indeed, this is one of the *Agricultural leading grain-growing products* sections of the world. Other important products are potatoes, hay, flax, and hemp. In the extreme southern part the climate is so mild that such crops as cotton and tobacco are produced.

More than one third of *Lumbering, mining, and manufacturing* Russia is covered with forest, so that lumbering is a very important industry.

Russia is also a noted mining country. It is one of the leading gold-producing nations, and so much petroleum is found here that it is used as a fuel in factories, steamboats, and railway engines. There is, however, little iron and coal mining, and partly on this account manufacturing is not greatly developed.



FIG. 259.—Reindeer used in winter for drawing sleds over the snow-covered ground of northern Russia.

One reason why all the industries of Russia, including manufacturing, are very backward, is the condition of the people. Until a few years ago, the great mass of the common people, or *peasants*, were really slaves. These peasants, called *serfs*, had hardly any education, and were treated much as dogs and horses are treated.

The serfs have now been freed, but they are still very ignorant, and are not allowed to take any real part in the government. Few of them can read and write, and few know what other people in the world are doing. Such people lack the knowledge and ability necessary for manufacturing and other industries.

Since Russia is mainly an agricultural country, its exports are largely food products and raw materials. Commerce for manufacture, and its imports are chiefly manufactured goods. How different this is from England, Germany, and France!

Russia is unfortunate in lacking good seaports. A part of the seacoast is on the Arctic Ocean, where the harbors are icebound most of the year. A part is on the Baltic Sea, and there, also, the harbors are frozen over in winter. The Caspian Sea has no outlet, so that vessels cannot get out of it.

The best seacoast is on the Black Sea, but to get from this to the Atlantic Ocean, it is necessary to pass through a narrow strait, called the Bosphorus, and then through the Mediterranean Sea. This is a very long journey. Russia therefore resembles Austria in its lack of good and convenient seaports.

On the other hand, the interior of Russia is so level that it is easy to build railroads there. Water transportation is easy, too, because there are several large rivers. Name them, and trace each one on the map. Into what water does each empty? The largest is the Volga, the greatest river in Europe, but it is unfortunate that it flows into the Caspian Sea. Why unfortunate?

The value of these rivers is greatly increased by means of canals, which, like railroads, are easily built across the plains. It is possible to go by river and canal, from both the Caspian and Black seas to the Baltic sea. On what rivers might one travel in making each of these journeys?

The largest city and capital of Russia is ST. PETERSBURG, a seaport at the head of the Gulf of Finland. This Great centers is the city in which the Czar of population lives and the Duma meets, and is larger than Philadelphia. It is not noted

either for its manufacturing or commerce, being chiefly a government center. Find some point in North America that is in the same latitude as St. Petersburg.

RIGA is another seaport farther south. Locate it. Russian commerce on the Black Sea is more important than that on the Baltic. The leading seaport there is ODESSA, which is the nearest port to the fertile wheat region of central and southern Russia. Great quantities of wheat are exported from Odessa, which also has many flour mills.

In the center of the country is Moscow (Fig. 260), which in size is next to St. Petersburg. It is the leading railroad center in the Empire. WARSAW, in Poland, is another large interior city. It has much manufacturing.

3. The Lesser Powers of Europe

(1) Norway and Sweden

The two kingdoms of Norway and Sweden, occupying the Scandinavian Peninsula, are each larger ^{Why thinly settled} than the British Isles. Yet both together have a very much smaller population.

One reason for the sparse population is the latitude. Look upon a globe to see what part of North America is in the same latitude. It would not be possible for the few million inhabitants of these two countries to live there if it were not for the warm west winds, which blow from the ocean. Even with that help, most of the region has a very cold climate.

A second reason for the small number of inhabitants is the ruggedness of the land. The surface is so mountainous that farming is impossible over the greater



FIG. 260.—A church in the Russian city of Moscow.

part of the peninsula. Most of the people are found in the southern and eastern parts, where the climate is milder and the land more level.

The hardy grains and vegetables are the principal farm crops, and many cattle and sheep are raised ^{Agriculture, lumbering, and fishing}. Why would you not expect to find cotton, grapes, and tobacco growing here?

Where the mountain slopes are too rugged for farming, there are extensive forests. About one fourth of Norway and much of Sweden is covered with forest. Therefore, lumber is one of the leading products of both countries.

Since crops are not extensively raised, fish are much used for food. There are



FIG. 261.—A view in one of the deep, grand fiords on the coast of Norway.

many of these, especially cod and herring, in the shallow waters near the coast.

Some valuable minerals are found in Scandinavia, notably iron in Sweden; mining and but there is no coal. The manufacturing mountain streams, however, furnish much water power, some of which is used in manufacturing. Most of the manufacturing is in the southern part of the peninsula, where it is not difficult to import coal for fuel.

On the map you will notice that the coast of Scandinavia is very irregular, especially in Norway. Here the sea enters the deep mountain valleys, forming long, narrow bays, with steep walls. Some of these inlets, called *fiords* (Fig. 261), reach many miles into the land. They make excellent harbors and form some of the grandest scenery in Europe.

Many tourists go up the coast of Norway every summer in order to enjoy the scenery of the fiords, and to see the great glaciers that descend from the high mountains at their heads. The tourist steamers cross the Arctic Circle and go as far as North Cape, where in summer one is able to see the midnight sun. During several weeks of summer, here, the sun circles around

the heavens and does not set in the middle of the night. For this reason the northern part of the peninsula is sometimes called "the land of the midnight sun."

The fiords of Norway have many protected bays of this kind, and form excellent天然 harbors, and for this reason the Scandinavian people have become sailors. In fact, in the Norwegian fiords the only way to get from one point to another is by boat. The need of obtaining fish for food has also helped to make the people skillful in building vessels, while the abundance of lumber has made it possible for them to build vessels very cheaply.



FIG. 262.—A Lapland boy, whose home is in Norway.

Largely for these reasons, the Norwegians and Swedes are extensively engaged in shipping. They build boats, and man them with sailors for use both in fishing and in carrying goods. Navigation is one of their leading industries, especially the carrying of goods for people of other countries.

The chief cities are in the south. STOCKHOLM, the largest, is the capital of Sweden. CHRISTIANIA is the capital and principal city of Norway. Each of these countries is a limited monarchy, with a king who lives in the capital.

(2) Denmark

Just south of Scandinavia is a very small peninsula pointing northward. On its relation to its northern end is the little country of Denmark, a limited monarchy, which also includes several small islands near by. The people of Denmark are closely related to the Scandinavians in language and customs, and at one time all three were united in one nation. In fact, these three countries are often called the *Norse* nations, or the countries of the Norsemen, or Northmen.

Denmark is quite unlike Scandinavia in one respect; that is, it has no mountains.

Industries Everywhere the surface is low, but much of the land is either sandy or swampy, so that there is less farming than one might expect. However,

half the people, and one of the principal industries is dairying. There is also much manufacturing and commerce.

You have already learned that Greenland is a Danish possession (p. 175). The Danes also own the ^{Colonies and} Faroe Islands and Iceland, ^{chief city} as well as some small islands in the West Indies.

The capital and largest city is COPENHAGEN, situated on an island east of the peninsula.

(3) The Netherlands

This little country is often called *Holland*; but the nature of the country is more clearly shown in its ^{Nature of the} other name, *The Nether-lands*, which means *low lands*. Almost all of this country is a low plain, partly the delta of the Rhine. Indeed, much



FIG. 263. — A windmill in The Netherlands, used for pumping out the water from the land inclosed in dikes.

of it is even lower than the surface of the sea.

In order to live on this very low part, the inhabitants have built embankments, called *dikes*,

to keep the sea out, and have dug canals to drain the land. The water that collects inside the dikes is pumped out by windmills (Fig. 263), or by steam. Canals extend in all directions, and furnish excellent highways for travel. They are, in fact, among the most important highways (Fig. 264), being used in summer for boats, and in winter for skating and sledding.

The damp, level land is well suited to agriculture, and this is the principal industry. Cattle raising and dairying are most important. The dairy products, especially butter and cheese, are shipped to other countries,

The Netherlands is a limited monarchy. The monarch resides at THE HAGUE, but the largest city ^{Principal cities} is AMSTERDAM. Another large city is ROTTERDAM, a noted seaport.

(4) Belgium

Holland is smaller than Denmark, but Belgium, another limited monarchy, is even smaller than Holland. ^{Area and population} Yet it contains more people than the Netherlands, and is, in fact,

the most densely settled country in Europe. Find its area and population in the table on page 255, and compare it in these respects with some of our states.

The northern part of Belgium is a low plain, but the southern half is much higher, and in places is quite hilly. Most of the kingdom is well suited to agriculture, and produces the same crops as Holland and Germany. What are these? One



FIG. 263.—Women in Belgium taking milk to market in a cart drawn by dogs.

some of the cheese—called Dutch cheese—being sent to the United States.

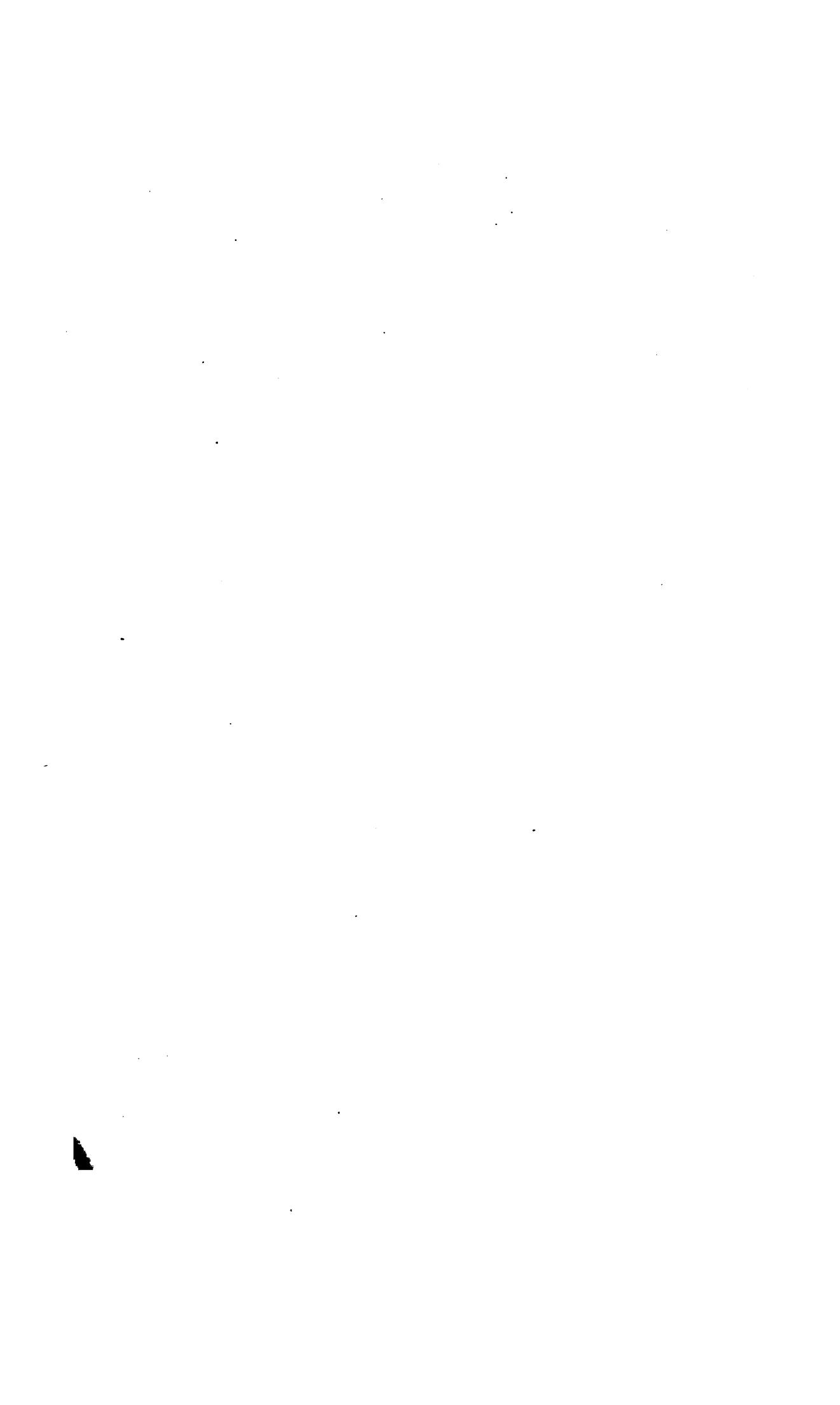
The Hollanders, or Dutch, as they are usually called, have been great explorers. They once had possession of the Hudson Valley, even the part where New York City now stands; and they still own some of the richest islands in the East Indies. They have much commerce with the colonies, as well as with other parts of the world.

very valuable product is flax.

The Belgians have long been skillful in the manufacture of linen and fine lace from flax, and also in weaving cloth from wool. In fact, it was from them that the English received some of their first lessons in manufacturing. BRUSSELS, the largest city, is famous for its beautiful lace, linen, and Brussels carpets. The latter are made of wool on a mat of linen.



FIG. 264.—A canal at Middelburg in Holland.



Besides such work, Belgium is noted for its manufacture of iron. This is because of the abundance of excellent coal, and of valuable iron deposits. Although so very small, Belgium may be compared with Germany and Great Britain as a manufacturing center.

BRUSSELS, the capital, is a city about the size of Boston. The **Principal cities** principal seaport, ANTWERP, is half as large.

(5) *Spain and Portugal*

There are several important facts which have prevented Spain from holding a high rank among the nations of Europe. One of these is the fact that a large part of the Spanish peninsula is too mountainous and rugged for agriculture. Most of it is a plateau, or table-land, half a mile or more above the level of the sea; and this is crossed by several mountain ranges. The Pyrenees, which extend along the northern border, are lofty mountains; but a range on the southern side, called the Sierra Nevada, is even higher. It has peaks almost as high as those of the Alps. Only along the coast, and in a few of the river valleys, is there much low land. Name and trace the principal rivers.

The peninsula lies so far south that its climate might be expected to be warm like that of Italy; but while **Climate** there are some small sections low enough to have a warm climate, most of the peninsula is so elevated that it has a cooler climate than one might expect from its latitude.

Lack of rain is an even more serious drawback. The Spanish peninsula lies

south of the belt of west winds, so that vapor is not brought from the ocean as freely as it is in the countries farther north. Much of the land, therefore, is arid; only along the northern and western coasts, including much of Portugal, is there enough rainfall for agriculture.

The people of Spain and Portugal have not been progressive, which is the greatest disadvantage of all. **Backwardness** At the time of Columbus **of the people** they were leaders in exploring the



FIG. 266. — Country people, or peasants, of Spain in native costume.

world; but since then they have been very slow to advance. They have lost most of their many colonies, and the chief reason for it was that they were old-fashioned and cruel in their methods of government. Partly for this reason these nations have become of less and less importance. While England, France, and Germany have gone steadily forward, Spain and Portugal have fallen far behind.

Cattle and sheep raising are the principal industries on the arid plateau, ~~Agricultural products~~ and there is farming in the rainy section, or wherever the mountain streams make irrigation possible. For centuries the Spaniards have made use of irrigation, and they introduced it into the New World. The chief crops are wheat and other grains, but in the warm southern valleys, grapes, olives, lemons, oranges, and figs are raised.

Spain, is the largest city in the peninsula; and the chief Spanish seaport ~~Principal cities~~ is BARCELONA. LISBON, the capital of Portugal, is another important seaport. Look in the tables on pages 256, 257 to see how these cities compare in size with some of our largest cities.

GIBRALTAR, on the southern tip of Spain, at the entrance to the Mediterranean Sea, is a part of the British Empire, and is strongly fortified. Why is this a good location for a great stronghold?



FIG. 207.—Here a road winds its way across a barren mountain pass, with the lofty, snow-covered Alps towering above it.

Spain is a very important mineral region, producing gold, silver, quick-silver, lead, copper, and iron. There is no good coal in the country, and most of the iron has to be shipped to other countries for manufacture. There is very little manufacturing on the peninsula, and commerce is not extensive.

Both Spain and Portugal have been limited monarchies; but in 1910 Portugal became a republic. MADRID, the capital of

(6) Switzerland

Switzerland is the only country of Europe, thus far studied, that has no seacoast. Neither has it a ~~Languages and~~ language of its own. No government notice what countries surround it. Although it is very small, most of the inhabitants of the southern part speak Italian; those in the west, French; and those in the north and east, German. The most common language is German.



FIG. 268.—Cattle grazing in the mountain pastures high up in the Alps near the snow line.

This is the only European country that you have studied, except two, that is not a monarchy. Its people, living among the mountains where they could easily defend themselves, or hide from their enemies, declared themselves independent of kings hundreds of years ago, and the country has long been a republic.

The many lofty mountains seriously interfere with agriculture (Fig. 267).

Agriculture The Alps extend completely across the country, and the Jura Mountains skirt the northwestern boundary. These mountains are so rugged that few people live among them, except in the valleys. Between the two mountain districts, however, is

a narrow plateau where the surface is much less rugged. It is here that most of the people dwell.

One of the leading farm products is grain, raised mainly on the plateau. On the lower lands, especially near the German border, there are extensive vineyards. There is excellent pasture for cattle and goats among the mountains, and these animals are raised there in great numbers (Fig. 268). In spring and summer, as the snows melt from the mountain sides, the goats and cattle are pastured higher and higher. Such pasture is called an *alp*, and this is the origin of the name of the range, the Alps.

Where the mountain slopes are too lumbering and rugged for farming, there manufacturing is much forest. Therefore, lumber is an important product of the country.

Although there is no good coal in Switzerland, the Swiss do a large amount of manufacturing. Among their principal products are wine, butter, and cheese. Wood carving is also an industry in which many of the Swiss find employment. During the long winters, the wood from the mountains is shaped into toys, clocks, and other articles.

Have you ever seen a Swiss clock?

The Swiss have become widely known for their manufacture of textile goods, such as lace, linen, silk, and cotton goods. They also make much jewelry, especially watches. In some of this work, water power is used, for an abundance of power is supplied by the mountain streams. A great deal of the manufacturing, however, is done by hand in the homes of the workmen, rather than in large factories. From these facts you can readily see that the Swiss people must be very skillful, progressive, and well educated.

In the lofty Alps there is some of the grandest scenery in the world. Their snow-covered peaks, their glaciers descending into the valleys, and the lakes in their midst, are wonders that many people like to view. Tens of thousands of people go to Switzerland every summer to enjoy the climate and the scenery, and one of the chief occupations of the Swiss people is to take care of such visitors.

The capital of the Republic is BERNE.

Chief cities Other important cities are ZÜRICH, BASLE, and GENEVA, three manufacturing centers.

(7) *Greece*

Italy, Spain, and Portugal were once far more important, in comparison with other countries, than at present. The same is true of Greece.

The country in Europe that has perhaps had the greatest influence upon the rest of the world is this small one. The Romans received many of their beliefs and customs from Greece, and since many of our customs came from the Romans, we also are greatly in debt to the Greeks.



FIG. 269.—Ruins of ancient Athens. The rocky height in the background is the Acropolis, on which there are some fine ruins of buildings many centuries old.

They were highly cultured people, and some of their sculpture and buildings are the most perfect and beautiful that have ever been made.

The center of this important country was ATHENS, once the most famous city in the world, and still the capital of the little kingdom of Greece. It was an important place many years later, at the time of Christ. Both ATHENS and CORINTH are mentioned in the Bible. Athens is even now the principal city, and, like Rome, has many interesting ruins (Fig. 269).

The surface of Greece is so mountainous, and the climate so dry, that the farm products are not of great value. Principal industries. Among the principal crops are currants, grapes, and other fruits. Grazing is

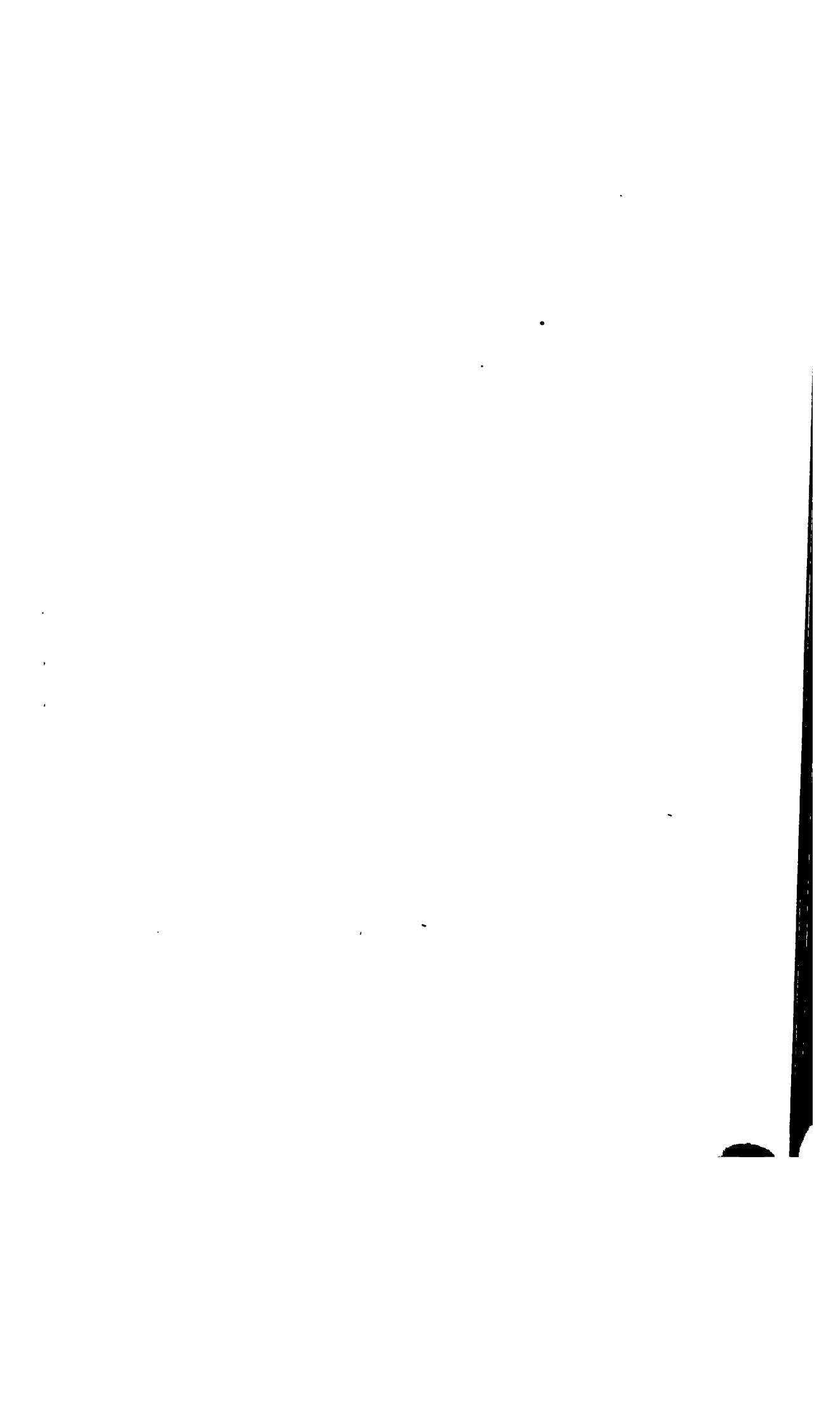




FIG. 270.—A street scene in Constantinople.

one of the leading industries, but there is little mining or manufacturing, and the commerce is not extensive.

(8) Turkey and the Balkan Countries

The largest city in southeastern Europe is CONSTANTINOPLE, which is not quite so large as Philadelphia. It is situated on the narrow strait of the Bosphorus, and guards the entrance to the Black Sea at the point where southern Europe comes nearest to Asia. This city is the capital and largest city of the Turkish Empire, which, like Russia, is a country that lies partly in Europe and partly in Asia. In addition, it has territory in northern Africa.

The Turkish government has been the worst in Europe, worse even than that of Russia. The ruler, called the Sultan, has been an absolute despot, who governed his people so badly that they have been kept very ignorant and poor. Only recently have the people been given some voice in the government.

One proof that the government has been bad is the fact that the people in many parts of the Empire have rebelled against it and fought for freedom. For example, Roumania, east of Austria, used to belong to Turkey, but is now an independent kingdom. The same is true of Greece. Bulgaria, Servia, and Montenegro also used to be a part of the Turkish Empire. Other people,

in sections still belonging to Turkey, would gladly be rid of the rule of the Sultan.

Owing largely to misrule, neither Turkey nor the Balkan countries just named have developed greatly. The main industry is agriculture, although much of the land is too mountainous for that purpose, and the methods of carrying on the industry are very backward. There are, however, broad plains in the Danube Valley, in Bulgaria and Roumania, where much grain is produced. Grapes, other fruits, and vegetables are raised in all of these countries; but one of the chief industries is grazing.

1. What is meant by Eurasia? By Europe?
2. Why has Europe so many independent countries with separate languages?
3. What about the area and population of Europe?
4. What reasons are there for regarding Europe as the most important continent?
5. Name and locate the Great Powers of Europe. Why also called World Powers?

1. Draw an outline map of Europe. Put in the boundaries of the principal countries.
2. With what part of North America does Europe correspond in latitude?
3. Find out why its climate is so much warmer.

1. Give reasons for regarding the British Isles as our mother country.
2. What are the parts of the United Kingdom? What about their area and population?
3. In what respects is this country especially important?
4. Why is agriculture not very prominent?
5. Name the main farm products.
6. What about lumbering and fishing?
7. Mining?
8. Manufacturing?
9. Commerce?
10. British colonies?
11. Locate and state the principal facts about the chief cities.
12. What is meant



FIG. 271.—A Turkish lady in native costume.

by the British Empire, and what is its form of government?

1. What books have you read whose authors lived in the British Isles?
2. What are the people from each of the four parts of these islands called?
3. What waters surround the British Isles?
4. Make a sketch of the British Isles, putting in the chief cities.
5. Suppose that you are now in London; point to Wales, Scotland, Ireland, the United States.

1. Tell about the founding of the German Empire, and its form of government.
2. Why is agriculture more prominent here than in the British Isles?
3. Questions 1. What are the farm products?
4. State the chief facts about lumbering and fishing.
5. Mining and manufacturing.
6. Commerce.
7. Chief cities.

1. Make a collection of photographs from Germany.
2. Do you know of some noted German paintings? Or of any music written by Germans?
3. What stories do you know about the Rhine River?
4. Make a drawing of Germany, including the principal rivers and cities.
5. What countries surround it?

1. What is the form of government?
2. What advantages for agriculture has it over the British Isles and Germany?
3. Questions 1. Name its chief farm products.
4. Tell about its lumbering and fishing.
5. Mining.
6. Manufacturing.
7. Commerce.
8. Chief cities.

1. Make a collection of photographs of Paris.
2. Examine a cocoon, and a piece of silk.
3. When a hole is broken into a cocoon, its value for silk is destroyed. Why?
4. Make a drawing of France, including the main rivers and cities.
5. Bound France.

1. Bound Italy, and tell its parts.
2. What is the form of its government?
3. What serious hindrances are there to agriculture?
4. Why is agriculture still the leading industry?
5. What are the chief farm products?
6. State the leading facts about each of the principal cities.

1. Find pictures of some of the ruins in Rome, or elsewhere in Italy.
2. What kinds of work do Italian immigrants to the United States usually undertake?
3. What copies of great paintings from Italy have you seen?
4. Make a drawing of Italy, including the chief cities.
5. Imagine that you are now in Rome; walk toward Naples; Genoa; Paris; Berlin.

1. How large is this country?
2. What about its two parts?
3. What kind of government has it? State the principal facts about agriculture and lumbering.
4. Mining and manufacturing.
5. Why is there so little commerce?
6. Name, locate, and state the main facts about the chief cities.

1. How far is Vienna from other leading cities of Europe?
2. Trace the course you would take if you traveled by water from New York to Vienna.
3. Bound Austria-Hungary.
4. Make a drawing of it, including in the sketch the Danube River and the principal cities.

1. What about the area and population of Russia?
2. The government?
3. What conditions favor agriculture?
4. What sections are unsuited to agriculture? Why?
5. What are the principal agricultural products?
6. Tell about lumbering, mining, and manufacturing.
7. Commerce.
8. Principal cities.

1. Why would you not expect Russia to have as many skillful sailors as the British Isles?
2. Name some city in the United States that has about the same latitude as Odessa.
3. Show the route a vessel might take in going from Odessa to St. Petersburg.
4. Bound Russia.
5. Make a drawing of Russia, putting into it the principal rivers and cities.

1. Why are these countries thinly settled?
2. Tell about their agriculture, lumbering, and fishing.
3. Mining and manufacturing.
4. Scenery.
5. Why is transportation of goods so important?
6. Locate the chief cities. What is the kind of government?

1. Sketch the peninsula. Put in the principal cities, and North Cape.
2. What is the latitude of North Cape?

Denmark

- What is the relation of Denmark to Norway and Sweden?
- What are the principal industries?
- Name and locate its colonies.
- Its chief city.

1. Questions

The Netherlands

- State the character of the country.
- Tell about its agriculture.
- What about navigation and commerce?
- Name and locate the principal cities.

1. Questions

2. Suggestions

- Find out something about the Dutch flower gardens where bulbs are raised.
- Tell what you would expect to see in crossing Holland on a train.
- What would result, if a dike were to give way?
- Who is the present monarch?

Belgium

- What about the size of this country?
- The population?
- What crops are raised?
- Tell about the manufacturing.
- Name and locate the principal cities.

1. Questions

2. Suggestions

- Examine some Brussels carpet.
- Sketch Holland and Belgium together, putting in the chief cities.
- Make a sand map of them, showing elevation of the land and the position of dikes.

Spain and Portugal

- What are the surface features of this peninsula?
- What is the climate?
- How has the backwardness of the people been a disadvantage?
- What are the principal agricultural products?
- What about mining and manufacturing?
- Name and locate the principal cities.

1. Questions

2. Suggestions

- Why would you not be able to ascend the rivers of this peninsula a long distance from the coast?
- Make a sand map of Spain, showing the highlands and lowlands, the cities and rivers.
- Examine some quicksilver. What are some of its uses?
- Find out something about the Moors, and the Alhambra, in southern Spain.

Switzerland

- What languages are spoken?
- What is the form of government?
- Tell about the agriculture.
- Lumbering.
- What kinds of manufacturing are there?
- Why are there so many tourists?
- Locate the chief cities.

1. Questions

- Read the story of William Tell.
- What disadvantages do you see in having so many languages?
- What large rivers rise in Switzerland? Describe the course of each to its mouth. Write a story, describing a visit to Switzerland.

2. Suggestions

- Tell about its former greatness.
- Its principal city.
- What are the industries?

1. Questions

- Read some stories of the ancient Greeks. One of the most interesting is the Odyssey.
- Collect photographs of the ruins in Athens.

Turkey and Balkan countries

- Locate the principal city of Turkey.
- What is the character of the Turkish government?
- Name the Balkan countries.
- What are the principal products?

1. Questions

- What is the boundary between Turkey in Europe and Turkey in Asia? Trace it.
- Russia would greatly like to get possession of Constantinople.
- Why?
- Make an outline sketch of Turkey in Europe.

- What countries of Europe suffer, to some extent, for want of rain?
- What is the largest river of Europe? Is it the most important? Why?
- What rivers rise in the Alps?

General Review Questions

- Through what countries does each flow?
- What large cities are located upon each?
- Make a sketch map of Europe, showing the location of the chief rivers and cities.
- Name and locate the principal mountain ranges of Europe. Include these in your sketch.
- On your sketch map, draw the boundaries of the countries.
- What three countries are republics?
- What two have a despotic form of government?
- Which countries border on the Atlantic Ocean?
- On the Mediterranean Sea?
- Which have a very good position for commerce? Why?
- Which have a very poor position for commerce? Why?
- Name the leading agricultural countries of Europe.
- Name the leading manufacturing countries.
- Bound each of the Great Powers of Europe.
- Name and locate the capital of each of these Great Powers. Put them on your sketch map.
- Name the capital of each of the Lesser Powers.

XIII. ASIA

1. Through what zones does Asia extend (Fig. 272)? 2. Where are the highest mountains and plateaus? 3. What rivers have their sources in that region? 4. What large inland seas do you find? 5. What three large peninsulas are on the southern side? 6. What two are on the eastern side? 7. What islands lie east of Asia? 8. How does Asia compare in size with Europe? 9. Find Asia on a globe. 10. How could you reach it, if you wished to go there?

i. General Facts about Asia

The main part of Eurasia, which we call Asia, is larger than any other continent. Indeed, it is greater than North and South America together, or Europe and Africa together.

It has more inhabitants, also, than any other continent. More than one



FIG. 274.—A nomad family in camp on the desert of Persia.

half of all the persons on the earth live in Asia; and in the one country of China there are more people than in all the countries of Europe combined.

It might be expected that Asia would be one of the best known of the continents; for it has the oldest civilization, and is very near

Europe. Besides that, long before the New World was discovered, a flourishing trade was carried on between Europe and the Indies. The fact is, however, that Asia, next to Africa, is the least known among the continents. Let us find some of the reasons for this.

In the first place, although Europe and Asia are so close together, their leading countries are separated by a desert, which is really more difficult to cross

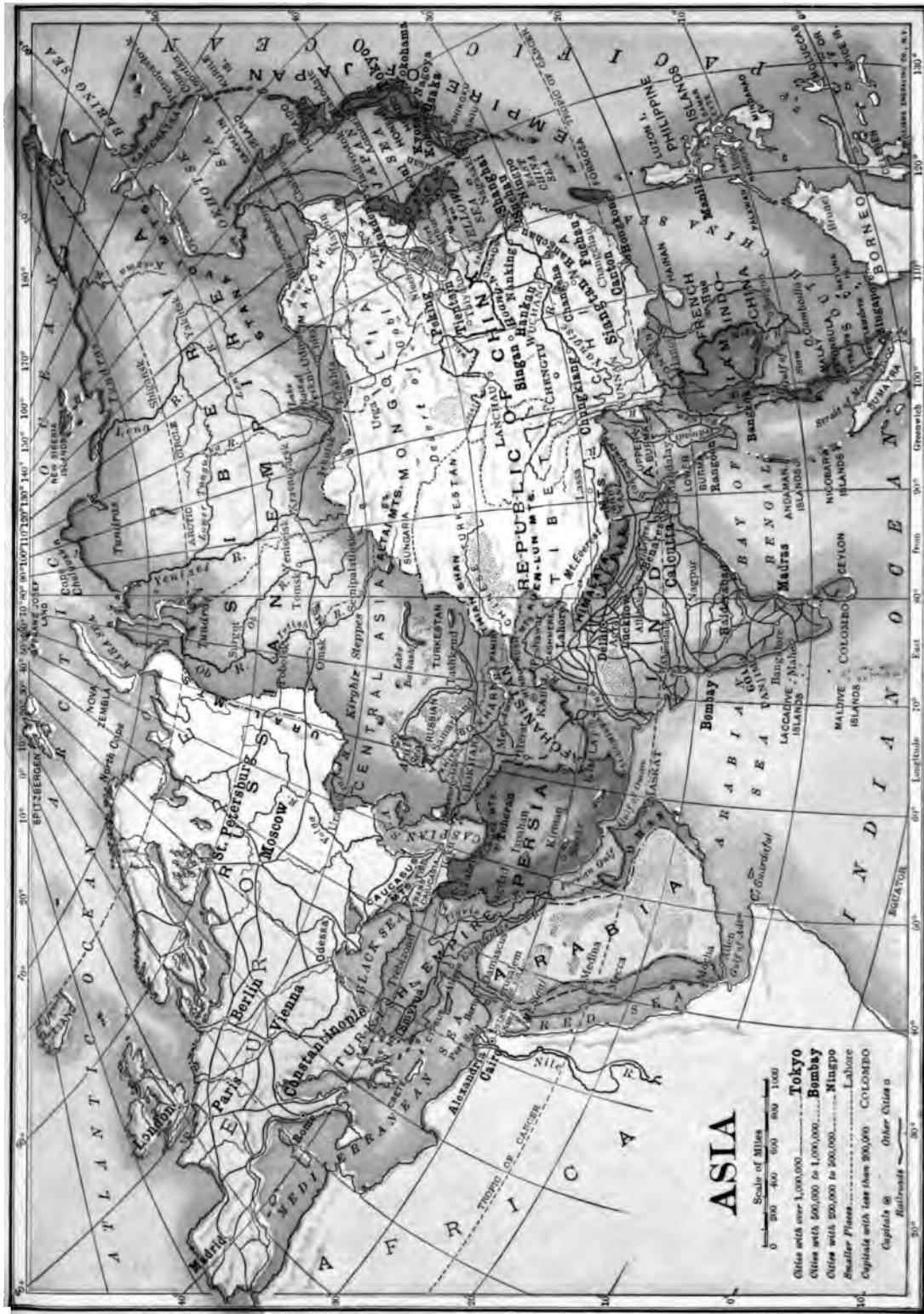
1. Because of arid and desert land in the west

The two great seas in southwestern Asia, the Caspian and Aral seas, have no outlets and are salt, although large rivers pour volumes of fresh water into them. What are the names of these rivers? How does the area of these lakes compare with that of Lake Superior, the largest of our Great Lakes (p. 258)? While these salt seas are of great size, the fact that they have no outlets tells very clearly that the climate here is dry, for the water evaporates faster than the rivers can pour it in.

Most of the vast region between the Irtish River and Africa is either desert or arid land (Fig. 273). Estimate the distance across this arid country

from east to west. When you realize that it is two or three thousand miles, you can see what a barrier this section must always have been to commerce and acquaintance between the people of the two continents.

In the second place, it is easy to see why Siberia — which makes up more



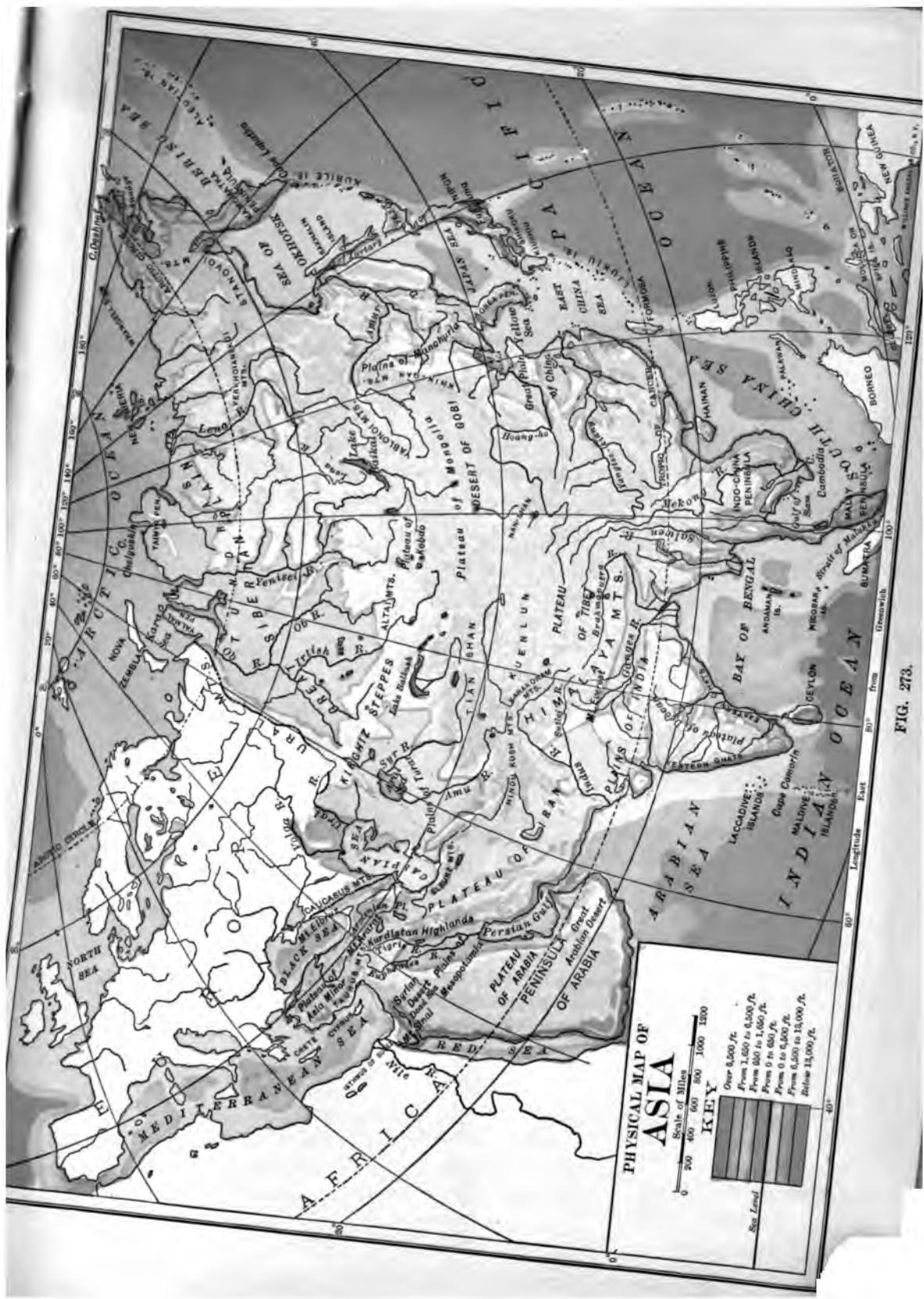


FIG. 272.



than one fourth of the whole continent
 2. Because of — should have been little
 the extreme cold visited, for most of it is a
 in the north very cold country. Note
 how much of it lies in the frigid zone.

plateaus, rather than low plains. One of them, the plateau of Tibet, is from two to three miles above the level of the sea, which is higher than most of the peaks of lofty mountains. You know



FIG. 275.—The Snowy Range in the Himalaya Mountains, the loftiest mountains in the world.

The main slope of this vast plain is toward the north. Trace its three great rivers. What are their names? Like the Mackenzie River in North America, they have been of little help in exploring the country. Why?

For several reasons, the vast central portion of Asia has also been difficult to explore. On Figure 273 observe how many mountain chains are found there. Among them are the Himalayas, just north of India, the loftiest mountain range in the world (Fig. 275). Mt. Everest, the highest peak, rises over twenty-nine thousand feet, or five and one half miles above the level of the sea. Find this mountain on Figure 272. How does it compare in height with Mont Blanc in the Alps? (See table, p. 258.)

There are vast stretches of level land among these mountains, but they are

3. Because of
the plateaus,
mountains, and
deserts in the
central part

(p. 25) that the summits of mountains are cold; so, also, are high plateaus. Thus most of the highland of Central Asia has a cool or cold climate.

Much rain and snow falls on the edges of this vast highland. Note the rivers that find their sources there. The three on the north side, crossing Siberia, have already been mentioned. What are their names? What three are found on the east side, emptying into the Pacific? Name several on the south side. From this you see that most of the great rivers of Asia rise in this highland region, just as most of those of western Europe rise in the Alps.

Since the winds lose their vapor on the margin of this great highland, its interior is largely desert or arid land. Find the Desert of Gobi.

A region so mountainous, and so cold and dry as Central Asia, is difficult to explore; and it is not strange that we know little about it even to-day.

From what has been said about the western, northern, and central parts of

4. Because of the character of the people the continent, it is evident that there can be but few inhabitants in those sections.

The vast hordes of people living in Asia must, therefore, dwell in the eastern and southern parts. Most of them live in China, Japan, and India.

How well do we know those parts of the continent? This time it is the character of the people, rather than of the

has long been under the control of the British.

In recent years the situation has greatly changed, and we are now rapidly becoming acquainted with all the Asiatic people and their continent.

2. Southwestern Asia

Turkey in Europe you have already studied about (p. 213); but much the larger part of Turkey is in

The countries

Asia. Trace here included

its boundaries. The other principal countries here included under Southwestern Asia are *Arabia*, *Persia*, *Afghanistan*, and *Baluchistan*. Trace the boundaries of each.

The western portion of this part of Asia has long been the part known to Europeans. One reason for this is that, for centuries before the discovery of America, the trade routes between

Why the most familiar part of Asia

Europe and the East Indies either crossed this region, or else skirted it on the southwest.

The other reason is the fact that it contains the land once called Palestine. Rome has been of great importance in the world's history, and so has Athens, as we have seen; but the part that has had the greatest influence of all is this tiny Palestine, which has an area of less than a hundred miles square. Here was the early home of the Jews. Here still stands Jerusalem, where Christ was



FIG. 276.—Pilgrims entering Bethlehem on Christmas day. It was here that Christ was born.

country, that has been in the way. The Chinese, for instance, of whom there are such great numbers, are very different from Europeans and Americans, and, until quite recently, they have not wanted anything to do with foreigners. They have not been willing to admit white people into their country even as visitors. How, then, could we find out much about them and their country?

Until about fifty years ago, the Japanese felt and acted the same way toward us. India is better known, because it

crucified; and near by is Bethlehem (Fig. 276), where Christ was born over nineteen hundred years ago. The many Christian churches have been built in His memory, and Christmas itself is a reminder of His birth.

Palestine is not shown on our map as a separate country, for it is now only a part of the Turkish Empire. One might suppose that so sacred a place would be carefully preserved by the many millions of Christians in the world. They have, indeed, tried to preserve it; thousands and thousands of Europeans have died in the attempt to save Jerusalem from the Turks. Yet the Turks have held it for hundreds of years, and Palestine is now only a part of a little country, called Syria, which belongs to Turkey.

The Turks are *Mohammedans* (Fig. 277), or followers of Mohammed, who was born at Mecca about fourteen hundred years ago. Although they believe in God, their religion is very different from ours, and their holy book is the Koran, not the Bible. Mecca is their holy city. Find it on the map.

The Mohammedans are religious fanatics, and have no patience with any other belief. They detest all Christians, even believing that it is right to kill them. That is one reason why they have wished to capture the holy city, Jerusalem, and destroy whatever reminded them of Christ.

In order to spread their religion, the Turks have often gone to war with neighboring peoples, and have added to their Empire much of the territory that they have conquered. Their country now has a very irregular shape, as you see. What two large rivers do you find? What city is on the lower Tigris?

How it happens that Pal-
estine is a part of Turkey

If you have ever read "The Arabian Nights," you have read about it.

The reason why not all of *Arabia* is included in the Turkish Empire, is that the Turks have never conquered the inhabitants of the interior of the peninsula. It is an arid and desert plateau,



FIG. 277. — A Mohammedan priest in eastern Asia.

with oases here and there. As in the Desert of Sahara, many of the Arabs are nomads, who wander from place to place tending their flocks of sheep and goats and their herds of horses, cattle, and camels. They live much of the time in the saddle, and are fierce warriors.

One of the products of this region is coffee. You have, perhaps, heard of Mocha coffee; if you look on the map, you will find the city from which it gets its name. Wheat, grapes, olives, figs, dates, oranges, tobacco, and cotton are raised in the Turkish Empire and in *Persia*, usually by the ^{Agricultural products of Southwestern Asia} of irrigation.

The people of this part of Asia are not advanced enough to carry on much manufacturing; **Manufacturing** yet beautiful carpets, rugs, and shawls are made in great numbers, especially in Persia and Turkey. The work is done by hand, and it takes many weeks to make a carpet of the same size as one which could be made in a factory in a few hours. These hand-made rugs and carpets are so beautiful, and wear so well, that they are everywhere highly prized.

Throughout this entire region, which is about two thirds as large as the United States, **Commerce** there are very few railways, and even wagon roads are usually lacking. Goods are carried mainly upon the backs of camels, which travel in groups, called *caravans*; and men usually travel on the backs of horses and camels.

The people have advanced very little, and many of their customs are the same as those of the days of Christ. Even to-day, in many parts of this section, it is not safe to travel without a strong guard of soldiers. It is especially dangerous for Christians, since the Mohammedans have so deep a hatred for them.

Cities There are few large cities in this entire region, **SMYRNA**, in Turkey, and **TEHERAN**, the capital of Persia, being the largest. Find the capital of the Turkish Empire.

3. Russia in Asia, or Siberia

This vast country, extending from the Ural Mountains to the Pacific Ocean, is a **part** **Its best-settled** part of the Russian Empire. The best-settled section is in the south, near Persia and Afghanistan. Even this part is thinly inhabited, for the region is arid and desert, like the countries farther south.

The occupations, also, are similar to those of southwestern Asia. In the river valleys, and on the oases, agriculture is carried on with the aid of irrigation; and on the arid lands grazing is important. Meat, hides, wool, and cotton are

the principal products. There is scarcely any manufacturing except the making of rugs, shawls, and cloth, by hand. Many hand-made rugs from *Bokhara* and *Khiva* are used in the United States. Find these places on the map.

The northern portion, a land of frozen tundras, is the coldest region on any of the continents. The few people who live there resemble the Eskimos. **part** They keep herds of reindeer, which supply them with milk, meat, and hides, besides serving as draft animals.

The middle part of Siberia is a vast plain which is little settled as yet, but it is the most promising **Its most prom-** **ising part** section for the future. It has much good soil, and is suited to the production of grains. There is much forest here, and in the mountains valuable minerals are found, including gold and graphite, or "black lead," from which pencils are made.

One reason why this region has not been better settled is the fact that it has been difficult to reach. The rivers, which flow northward, have been of little use, and until lately there have been no railroads. The Russian government has built a railroad all the way across Siberia, so that it is now possible to travel by rail from St. Petersburg to PORT ARTHUR on the Chinese coast. About how far is that? Find IRKUTSK, which is on this railway.

Russia has long used Siberia as a prison, and thousands of prisoners have gone there. Many have been sent not because they have committed any crime, but **Use of Siberia as a prison** because they have said or done something that the Russian rulers did not like. Some, even, have been merely suspected of saying or doing something. Many have been seized by officers and thrown into prison without a moment's warning; then, without trial, they



FIG. 278.—A farming scene in the mountainous region in Siberia.

have been transported to Siberia to work in the mines. Men and women of the highest character have been thus torn from their families and hurried away so secretly that not even their friends knew what had become of them.

Such treatment shows the meaning of a despotic form of government. It also shows us very clearly how fortunate we are in living under such a government as our own.

4. Republic of China

Some of the most important arts that man has ever learned have come from the Chinese. For instance, they made porcelain dishes long before the Europeans knew how, and on that account such dishes are still called *chinaware*, even though manufactured in the United States.

They invented gunpowder, and our firecrackers for the Fourth of July used to come from China. You have doubtless seen the Chinese letters on the outside of packages. They also discovered how to make silk and paper, and they invented the art of printing.

While this strange-looking, yellow race was once among the foremost nations of the earth, it is now very much behind the Great Powers of Europe and the New World.

This is partly explained by the fact that they believe that whatever their ancestors did, they must do. This is called ancestor worship. Since their fathers had no railways, telegraphs, or telephones, they have wanted none themselves. Also, owing to their dislike of new things, they have neither traveled much abroad, nor allowed foreigners to visit them. Indeed, they have looked down upon foreigners, or, as they call them, "foreign devils," who have so many strange customs.

A second cause for the backwardness of the Chinese has been their poor government, which until 1912 was an absolute monarchy. Now, however, the government has been changed to a republic.

In spite of these facts, it is quite pos-

sible that China with its new government will yet rank as one of the Great Powers.

Possible strength of China in the future

1. Area and population

Her vast population, which is larger than that of all Europe, and five times that of the United States, including Alaska, gives China one great advantage. Her area, which is greater than that of the United States, gives her a second advantage.

There are many kinds of soil, too. There are extensive plains, some of them broad river flood plains and ^{3. The surface features} deltas. On the other hand ^{features} some sections are plateaus, and there are also lofty mountain ranges. In so large a country, with so many differences in climate, soil, and surface features, there are certain to be many resources. Let us see what the principal ones are.



FIG. 279.—A part of the wonderful Chinese Wall, built centuries ago to prevent invaders from entering the country.

A third advantage is her great variety of climate. Observe through what zones the Empire extends. How much farther south does it reach than our most southern state, Florida? How much farther north, than our most northern states? From this it is plain that the variety of climate is even greater than our own, and that means, of course, that the agricultural products may be even more varied. As in our country, some parts are desert, some arid, and some have abundant rainfall.

2. Variety of climate

In northern and western China, the climate is arid, and there are some extensive deserts. Here the ^{4. Resources} principal products are meat, ^{(1) Agricultural products} wool, and hides. South and east of this there is rainfall enough for agriculture. Here the products of the temperate zone, such as wheat, can be raised. What other grains and agricultural products have you found in the northern half of the United States? All these can be raised in this part of China.

Central China, just south of this section, has a warm temperate climate. Here cotton, rice, millet, oranges, tea, and silk are produced. Rice is one of the chief articles of food for the Chinese, and China produces more raw silk than any other country in the world.

The southern part of the Empire extends into the tropical zone. Here we find tropical fruits, such as grow in Central America and the West Indies. Name several of them.

Thus China produces all the crops that the United States does, and more. Name some of their products that we do not raise.

There are some forest areas, and along the coast there is ⁽²⁾ *Lumber and fish*. The Chinese make much use of fish as an article of food, catching them from the rivers as well as from the sea. They even train birds to catch fish for them.

The Chinese have never been noted as miners, and therefore little is known about the mineral wealth of ⁽³⁾ *Minerals* the country. Still it is certain that there are vast deposits of coal of the very best quality, some of it hard coal, like that of eastern Pennsylvania. There are also extensive deposits of iron and other valuable minerals.

The natural means of transportation are also excellent. There is an abundance of good harbors, especially at the mouths of the ⁽⁴⁾ *Means of transportation by water* rivers; and these rivers are open to navigation far into the interior. Indeed, even now, the easiest way of

getting into the interior of China is by boat, especially on the Yangtse-kiang and Hoang-ho rivers. Trace these rivers.

The Chinese have built a number of canals, and these have been used for centuries. Find the Grand Canal on the map, and tell what cities it connects. Railways and electric cars, being new inventions, have been much disliked by the people. For that reason there are, even now, few of these in this vast Empire.



FIG. 280.—Chinese farming scene. All these level places have been built by the Chinese so that they may cultivate even the steep hill slopes.

Their methods of transportation have been, and still are, very crude. It has been the custom for men to take the place of horses, to a large extent, carrying goods on their backs, and drawing both people and freight in vehicles of various kinds.

One of the principal vehicles is the wheelbarrow (Fig. 281), which has but one wheel, and can therefore be used even where the roads are very narrow. It is said that passengers sometimes make the entire journey from Shanghai to Peking, a distance of six hundred miles, in a wheelbarrow. Labor is so cheap that it costs about twenty cents a day, or at the rate of about half a cent a mile, for each passenger, two traveling in a single wheelbarrow. This is about one fourth as expensive as the passenger rate on some of our railways. The passengers in the wheelbarrow, however, do not go so far.

in a whole day as we go on our trains in two hours! It is easy to see, too, that they do not travel so comfortably.

Of late, the Chinese are rapidly changing their customs. They are now



FIG. 281.—A Chinese passenger wheelbarrow, on which people are carried long distances.

sending hundreds of their ablest young men to Europe and Amer-

5. Recent **ica to learn about our advances** arts and industries.

They are inviting foreigners to their country, are building railroads, and are improving their laws. These signs of progress, together with the change in the form of government already spoken of, show that the Chinese are awakening at last; and it seems likely that they will make wonderful progress in the future.

A large portion of the population is massed along the coast and the lower course of the rivers. There are so many people living here that scores of thousands can find no room on the land, and live in house-

boats on the water. Many others dig caves in the hillsides, and live in these burrows.

In this country there are many large cities. Among these are PEKING, the capital; TIENTSIN, its seaport; CANTON, one of the largest cities in China; HONGKONG, a seaport near by; and SHANGHAI, also a seaport. Locate each of these on the map. From the tables on pages 256–258 see how each of these cities compares in size with our largest cities.

5. Japan and Korea

Japan is only a little more than one thirtieth as large as



FIG. 282.—A Chinese lady being carried by two men—a very common way of traveling in China.

China, and has only one-eighth as many inhabitants. It is not much larger than the British Isles in area and ^{Area and population} population.

On the map (Fig. 273) find the two largest islands, Nipon and Yezo, just

east of China. Also find Formosa, the most southern island of the Empire.

The Japanese, like their neighbors the Chinese, belong to the yellow race. **Advances since 1853** Like them, also, they for a long time wanted nothing to do with foreigners. In 1853, however, an American naval officer, Commodore Perry, entered the harbor of Yokohama with several war ships, and persuaded the Japanese to allow us to trade with them.

Since that time the Japanese have made wonderful advances. They have built railways and have established lines of steamships to many parts of the world. They have introduced the telephone and the telegraph, have established many newspapers, and numerous schools of all grades. At the same time they have made such progress in manufacturing that they are now one of the leading manufacturing nations of the world.

Only a few years ago Japan engaged in a war with Russia to prevent that Great Power from seizing Korea. The Japanese won the victory and made Korea a part of their own Empire. A few years before that they had a war with China, in which they easily won.

Japan is now far in advance of all other countries in Asia. She ranks as one of the Great Powers of the world, the only one in Asia, and is sometimes called the England of the Orient.

Probably no nation has ever advanced more rapidly than Japan has during the last fifty years. **Reasons for advance** Some of the reasons for this astonishing growth are as follows:—

Perhaps the most important of all has been the eagerness of the Japanese to learn. Soon after Commodore Perry's visit, they invited foreigners to come as teachers, and even sent thousands of their young men abroad, to study in the United States and Europe.

The valuable resources of the country are a second reason for the advance of Japan.

The climate is everywhere moist enough for



FIG. 283.—A scene in Japan. The mountain peak is the very perfect cone of the volcano Fujiyama.

agriculture, and, although much of the surface is mountainous, there is a great deal of excellent soil. The people have learned to cultivate it very carefully, too, allowing no land to lie idle that can possibly be used for crops.

The long distance over which the islands extend from north to south, makes it possible to raise many different kinds of crops. Measure to see how far it is from Yezo, on the north, to Formosa, on the south. What is the latitude of the northern and southern boundaries? The crops in the north are the products of the

XIV. AFRICA

1. What continent does Africa most resemble in shape? 2. In what parts are the chief mountain ranges (Fig. 291)?
Map study 3. Name and trace the three largest rivers. 4. About how much of Africa lies in the torrid zone? Is this an advantage or a disadvantage? Why? 5. How does its coast line compare with that of Europe in regularity? 6. What influence must that have

continents that history tells us about, and it lies so near Europe that the two almost join at the Strait of Gibraltar; yet it is the least known of all the continents.

There are several reasons why so little is known about Africa. In **Why Africa is the first place**, there is a **so little known** vast desert south of the Mediterranean



FIG. 292.—A caravan of camels crossing the Sahara Desert, bearing a load of the products of the tropical region of Central Africa.

upon the harbors? 7. What large island lies east of southern Africa? 8. What three groups of small islands lie west of northern Africa?

I. General Facts about Africa

Probably one reason why Africa is called the *dark continent* is the fact that **Why called the** it is the home of the black **dark continent** man. Another reason is that until recently we have known so little about it. It is one of the oldest

Sea (Fig. 292). It extends east and west across the continent from the Atlantic Ocean to the Red Sea; and from north to south it is a thousand miles wide.

This vast region, most of which is called the Sahara Desert, is very difficult to cross. It has no roads or railways, and the only way to travel over it is **1. The great** **desert in the** **northern part** on camels. There are so few oases that the watering places are usually many miles apart, so that both

camels and men may perish from thirst. Frightful sand storms sometimes arise, continuing for hours and even days; and in these the sand is drifted about by the winds, filling the air and sometimes even burying the caravans. If these perils are escaped, there is still the danger of attack from the fierce nomads who live in the desert, and who rob the caravans, often showing no mercy to travelers.

It is not strange, therefore, that Europeans have failed to become well acquainted with Africa by entering it from the north.

One of the largest cataracts is Victoria Falls (Fig. 293), in the lower Zambezi River. It is larger even than Niagara, and is one of the grandest waterfalls in the world. The Nile also has several rapids; and there is a great cataract in the Congo. Thus the rivers have been of little use in exploring the continent.

A third reason why we know so little about Africa is its unhealthful climate. Notice where the Trop-

^{8.} The un-
heathful cli-
mate
ics of Cancer
and Capricorn

cross the continent. From this you see that most of Africa is in the tropical zone. Indeed, the equator crosses it not far from the center, and only the northern and southern parts are in the temperate zones.

In this tropical region, the low coast lands have too hot and damp a climate for white men; and there is much malaria, as



FIG. 293.—The Victoria Falls in the Zambezi River of South Africa.

One might expect the large rivers to offer a good means of reaching the interior. Trace the Nile, Niger, Congo, and Zambezi, and notice how far they extend into the continent. If these could be navigated far up toward their sources, as our Hudson and Mississippi rivers can be, they would make excellent highways to the interior; but this cannot be done, for all of them have rapids and falls in their lower courses.

The reason for these falls is that the interior of Africa, like that of both Mexico (p. 176) and Spain (p. 209), is mainly a plateau, whose elevation is from a quarter to a half mile above the level of the sea. In descending from this plateau, the rivers tumble in cataracts and falls.

^{2.} The rapids
and falls in the
rivers

well as other diseases that thrive in a hot, damp climate. Generally, therefore, Europeans can live with comfort only upon the high land of the interior. This fact has helped to keep foreigners out of Africa; for settlements in new countries are usually first made along the coast. It is dangerous even to cross the narrow strip of low coast land.

A part of Central Africa, where the rainfall is very heavy, is covered by a dense forest like that in the Amazon Valley (p. 182). ^{4.} The forest jungle, the wild animals, and the savages This forest extends north and south for a full thousand miles, and is very difficult to traverse.

^{4.} The forest
jungle, the wild
animals, and
the savages

Besides this, there are many wild animals in the forest and on the open plains to the north and south of it. Among these are the lion, elephant, rhinoceros, hippopotamus, and giraffe as well as many serpents. Some of these animals, like the lion, are very fierce and dangerous.

Another difficulty comes from the great numbers of savage black men, or Negroes, many of whom are dangerous men to meet. For centuries the Negroes have been seized and carried away as slaves to various parts of the world. Even to-day, the Arabs seize many of them for that purpose. Such treatment has not helped to make them friendly to white men.

Strange as it may seem, the best-known part of Africa is the very southern part, the known part farthest from Europe. You will notice that this region lies in the temperate zone, which is one reason why Europeans have gone there. Another reason is that, in former days, ships going from Europe to India had to sail around the Cape of Good Hope. In this way men learned about that section; and long before other parts of the continent were occupied by Europeans, the Dutch had colonies in South Africa. This is now the best developed part of the continent.

Only during the last half century has there been much exploration and settlement in other parts of Africa. In that time, however, some of the countries of Europe have been very active, and have laid claim to a large part of the continent, just as they laid claim to North America several centuries ago.

You can see from the map that Africa is divided into many more countries than our continent ever was. What parts are owned by Great Britain (Fig. 310)? By Germany? By France? What other countries have colonies there (Fig. 290)? Make a sketch of Africa, showing the sections owned by the three Great Powers of Europe just mentioned.



FIG. 294.—A negro hut in Africa.

Now that so much of Africa is under the control of Europeans, people are going there to explore and settle, just as people have come to our own country. Thus the continent is rapidly becoming known.

In the past, in most parts of Africa, there have been very few wagon roads. Goods had to be carried either on the rivers or along paths or trails. The natives themselves usually carried these goods on their backs. Now, however, roads, railways, and telegraph lines are being built.

You will see three large lakes on the eastern side, south of the equator. What are their names? Each of these is important for navigation, for upon them steamboats can go long distances. The rivers are also more used for navigation. Above and below the waterfalls of the Congo, Nile, and other rivers, boats can run long distances. By build-

portant cities along the coast of northern Africa.

Later, Arabs from Asia spread westward over that section, and their descendants still occupy the region. Like the Turks (p. 219), they are Mohammedans, and they still make pilgrimages to the holy city, Mecca, in Arabia. Their manners and customs are very different



FIG. 295.—A group of nomads and their tent on the northern border of the Sahara Desert in Algeria.

ing railways around the falls and rapids, these rivers are now becoming of great value for transportation.

The boldest plan of all is to build a railway from the Cape of Good Hope to Cairo in Egypt. How far is that? It is called the Cape-to-Cairo route. Doubtless one will in time be able to travel by rail all the way from Cape Town to the Mediterranean Sea.

2. Northern Africa

The northern part of Africa has long been settled by the white race. Indeed, Character of in early days, when the the people Greeks and Romans were flourishing, there were large and im-

from those of Europeans. Indeed, they still live much as the people of western Asia did in the time of Christ. They know little about the rest of the world, and carry on scarcely any trade with other people. Their manufacturing is done by hand, and the chief products of the country are those needed for the simplest food, clothing, and shelter.

The best-known country in this section is *Egypt*, which is crossed by the Nile River. Trace its ~~Egypt~~, the old-boundaries. CAIRO is its ~~est~~ country capital and largest city, and ALEXANDRIA is the chief port.

This is the country over which the Pharaohs, the kings of Egypt, used to



FIG. 296.—One of the pyramids of Egypt, built of huge blocks of stone to a height of several hundred feet. They were used as tombs for kings who lived thousands of years ago.

rule. Ruins of their buildings, and their immense pyramids (Fig. 296), built thousand of years ago, may still be seen. Here, the Bible tells us, Moses once lived; and Joseph, also. What stories do you remember about them?

Egypt is a desert country, like Arabia to the east and the Sahara to the west.

Yet Joseph's brothers, you may remember, went down into that country from Palestine, to get food. It is still a great agricultural region.

The fact that Egypt is so productive is due to the Nile River. Every year floods cause the river to rise until it overflows its banks. The water, carrying a large quantity of sediment, has built a fertile flood plain on either side of the river, and a broad delta at its mouth. The annual floods spread over these broad plains. Each overflow leaves a thin layer of rich mud, and at the same time

provides the water necessary for crops. Thus each year the river both waters and fertilizes a vast tract of level, fertile land. In this way, for thousands of years, millions of people have been supported in the midst of the desert.

Egypt lies just north of the Tropic of Cancer, and therefore it has a warm temperate climate. It is so warm there that crops like those of our Southern States can be produced. Among the principal products are grain, cotton, and sugar cane. Cotton and

wheat are sent to European countries, especially to England; for the British have some control over Egypt, although they do not fully govern it.

The eastern part of Egypt includes the Isthmus of Suez, which connects Africa with Asia. Because of this narrow neck of land, ships sailing from Europe to Asia were long compelled to go all the way around Africa. In 1869 a canal eighty-seven miles long, and wide and



FIG. 297.—A ship in the Suez Canal.

deep enough for large ocean ships, was opened across the Isthmus. On a globe, estimate how many miles are saved by the Suez Canal (Fig. 297) in making a journey from London to Calcutta.

Name the countries west of Egypt along the Mediterranean coast. What Other countries are their capitals? Most of of northern these countries, like Egypt, Africa are controlled by European nations. Algeria, which is a French colony, is the most important.

Farming and grazing are the principal industries of this whole region, and the products are similar to those of Egypt and southern Europe. There are also some mineral deposits, but the people are so unprogressive that little is done with them.

3. Central Africa

In the northern part of Central Africa is the *Sudan*, a broad strip of country extending across the continent from east to west. Its northern edge is arid, for it grades into the Sahara Desert on that side; but farther south it receives plenty of rain during one season of the year, while the other season is dry. This prevents the growth of forest, except along the rivers, for trees cannot live through the dry season. Agriculture, however, is possible here, and even the Negroes raise crops.

Abyssinia, one of the few parts of Africa not controlled by European nations, lies in this belt. Point out this country. The land is high here, making the temperature cooler than it would otherwise be.

The climate of the Sudan changes toward the south, and near the equator an abundance of rain falls at all seasons. It is here that the dense tropical forest exists (p. 232), and in it many valuable tropical plants grow, including the rubber tree. Among the wild animals, the ele-

phant is especially important, for its ivory tusks are very valuable (Fig. 298). One of the chief reasons why caravans cross the Sahara Desert is to obtain this ivory.

A number of the countries in Central Africa belong to European nations. Name these countries. Find Belgian Congo. What great rivers do you find? What lakes?



FIG. 298.—Negroes of Africa carrying the huge ivory tusks of the elephant.

4. South Africa

Much of South Africa was first claimed by the Dutch of Holland. The English, however, long ago got possession of Cape of Good Hope; and by war they obtained the other Dutch countries of South Africa. They are now united under the name, The Union of South Africa.

What other European countries have possessions in South Africa? What important rivers do you find here?

What does the latitude tell you about the climate of this region? Which is its climate the coolest part? Why?

Along the eastern coast there is abundant rainfall, for the winds here blow from the Indian Ocean; but the winds lose their vapor on the eastern slopes, and the interior and the western side of South Africa are therefore arid. In fact, parts of this section are as desert as the Sahara.

Grain is the most important crop, but ranching is the leading industry on the arid Its agricultural products plateau and on the low mountains that rise above it here and there.

A peculiar industry in South Africa is ostrich raising (Fig. 299). The ostrich, which is the largest of birds, is unable to fly, but on its wings and tail it has large, delicate, and beautiful feathers, which are very valuable. For what purpose are they used? The home of the ostrich is the desert of northern Africa, where it runs wild; and ostrich feathers are one of the products of the Sahara. The feathers are so costly that it pays to raise these birds to obtain them.

One reason why South Africa has been so attractive to the English is its Its chief attraction for the English great mineral wealth. This is the richest gold-mining region in the world, producing even more gold than all the mines of the United States. JOHANNESBURG is in the center of the gold district.

Farther south, at KIMBERLEY, diamonds are found in the decayed rock. This rock is dug out (Fig. 300) and care-

fully washed, in order to separate the precious stones from it. These mines produce more diamonds than any other part of the globe.

The diamonds are so small that one valued at several hundred dollars might easily be hidden and carried away by a workman. In fact, men have been known to swallow them in order



FIG. 299.—Ostriches on an ostrich farm in South Africa.

to carry them away without being detected. To prevent such theft, the men are not often allowed to leave the works. They are furnished with homes and food by the company, and, when they wish to leave, they are carefully examined to see that none of the precious stones are being taken away.

1. Why is Africa called the Dark Continent?
2. How has the Sahara Desert prevented the exploration and settlement of Africa? 3. How have the rapids and falls in the rivers interfered with its exploration? 4. State how the climate has had a similar effect. 5. How have the

Review Questions

forests, animals, and peoples likewise kept Europeans away? 6. How does it happen that South Africa is the best-known part? 7. What parts of Africa have been recently seized by Europeans? By what nations? 8. What improvements have been made by Europeans? 9. Tell something of the character of the people in northern Africa. 10. Name and locate the chief cities of Egypt. 11. What do you know about the ancient history of Egypt? 12. Explain how the Nile River helps to support the inhabitants. 13. Name the agricultural products of Egypt. 14. Tell about the Suez Canal. 15. Name and locate the other countries of northern Africa. 16. What is the character of Central Africa? 17. Name the products. 18. How does it happen that South Africa is largely owned by the English? 19. Describe its climate. 20. What are its agricultural products?

largest cities in Africa be located on the Nile River near its mouth? 4. Find some object made of ivory, and show it to the class. 5. Examine an ostrich feather and a diamond. 6. Why are there no tributaries to the northern half of the Nile? 7. Find out about the war between the Boers and the British. 8. Read the story of Joseph in the Bible, beginning in Genesis, Chapter 37. 9. Draw an outline map of Africa and put in the principal countries and colonies, rivers, and cities.

XV. AUSTRALIA, THE EAST INDIES, AND OTHER ISLANDS OF THE PACIFIC

1. Find Australia on a globe, and show how you would reach it by ship from New York.

Through what waters **Map study** would you pass (Fig. 106)? 2. How would you reach it from San Francisco? 3. In what part are most of the mountains? 4. The rivers? 5. The cities? 6. In what zones is Australia? What does this tell you about its temperature? 7. What parts of South America and Africa are in the same latitude as southern Australia? 8. What are the principal islands of the East Indies? 9. In what direction are the Philippine Islands from Australia? Estimate the distance. 10. Find the Hawaiian Islands; New Zealand.



FIG. 300.—A diamond mine at Kimberley in South Africa. Many thousands of dollars' worth of diamonds have been taken out of this pit.

tural products? 21. Its mineral products? 22. Name and locate the cities. 23. Tell about diamond mining.

1. What reasons can you give why Timbuktu, on the Niger River, should be an important trade center? 2. Beginning with **Suggestions** the western Sahara, trace the desert country that extends eastward across Africa and Asia. 3. Why should the two

eastern divisions of Australia—Victoria, New South **Ownership of** Wales, and Queensland—**this continent** suggest the country to which Australia belongs. What one is it? The British control only a part of the other continents, but Australia, the smallest of all the continents, they have entirely to themselves.

I. Australia

The names of the three eastern divisions of Australia—

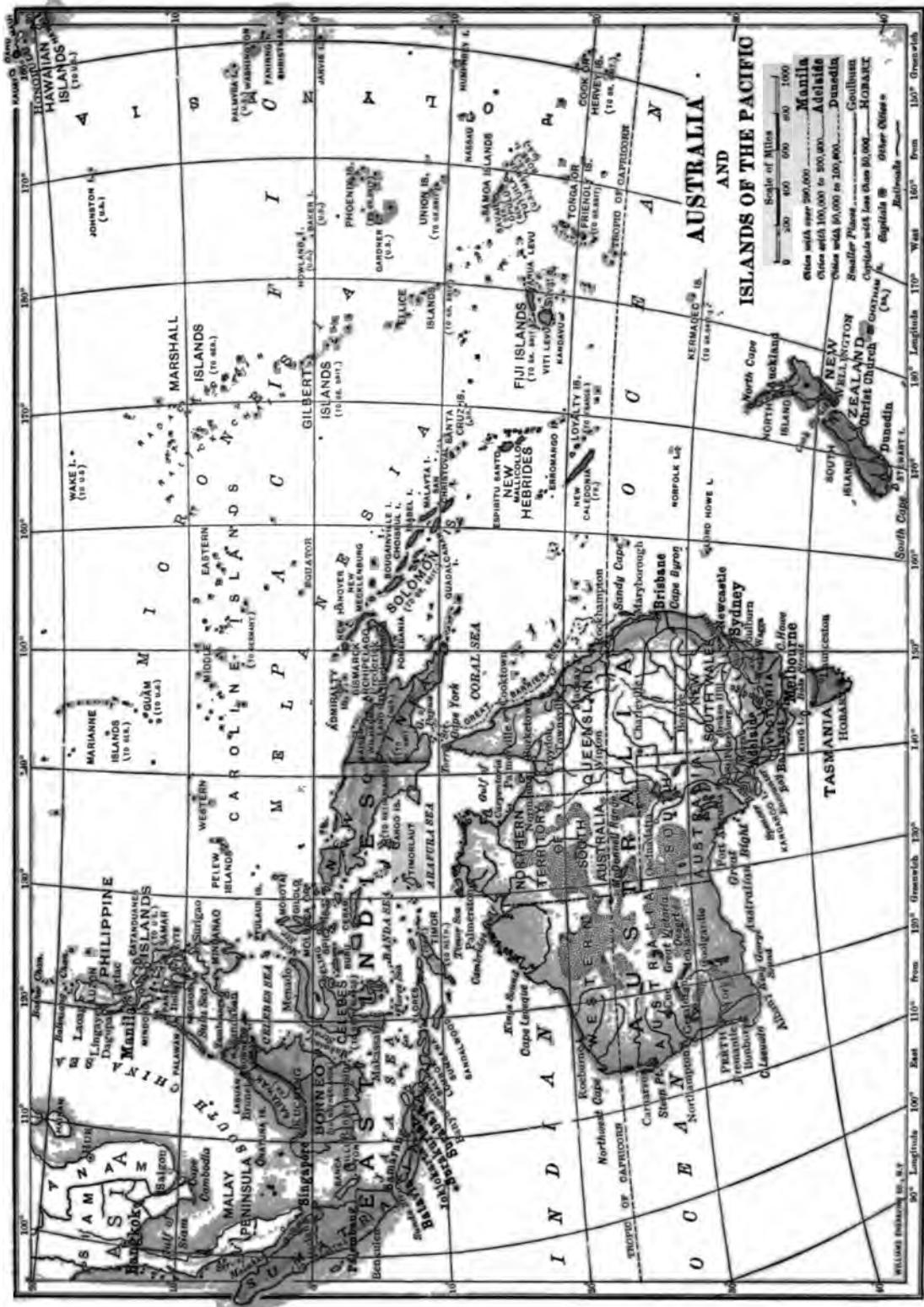


FIG. 301.

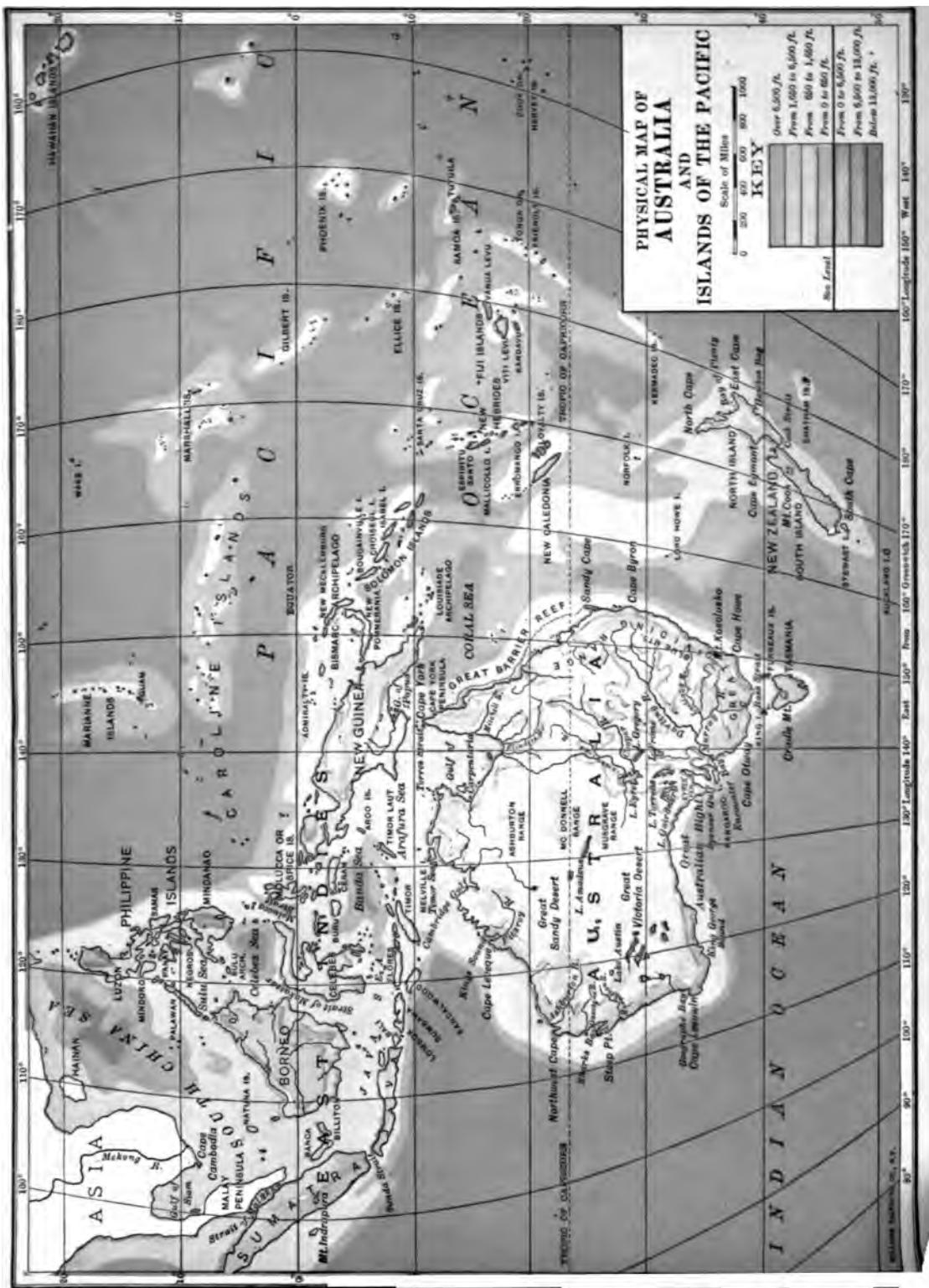


FIG. 302.



As in Canada, the several states, including the Island of Tasmania on the south, have combined to form a union. Together they form a British dependency, as Canada does. This is called the Commonwealth of Australia.

When the English began to settle Australia, over a century ago, they found

Native plants, animals, and people of Australia very strange plants, animals, and people there.

Indeed, these were quite different from those found elsewhere.

Giant trees, nearly as large as those of our west coast, were found growing along the eastern coast; and in the forests were great tree ferns (Fig. 303). Part of the interior was covered by a low bush, or "scrub," having hard, prickly leaves, and often growing so densely that it was difficult to make one's way through it. This was called "the Bush."

None of the fierce animals, like bears, wolves, tigers, and lions, that are common in

other continents, were found in Australia. The largest animal was the kangaroo (Fig. 304), which instead of running on all fours, jumps along on its hind legs, using its tail for support. There were other peculiar animals unlike those living in other parts of the world.

The native people were found to be a very low class of savages, and as some of them lived in "the Bush" just mentioned, they came to be known as *Bushmen*.

When the English took possession of Australia, it seemed to be of little importance. At first it was used mainly as a *penal colony*, or prison, to which criminals

were sent. It was a very secure prison, too, for there was little danger that a man sent there would soon reach home again.

As the continent came to be better known, however, people began to go there of their own accord to live. Now Australia has over four million inhabitants. Present population and its distribution



FIG. 303.—A view in the forest of eastern Australia. Notice the huge tree ferns that grow here.

Instead of being distributed equally over all parts of the continent, these people are largely collected in the southern and eastern portions.

The temperature is not the main cause of this, for that is pleasant enough in most parts of Australia. The reason for as you can tell by the latitude. Prove this by means of the map. What portion is in the tropical zone?

The great difficulty is the lack of rain and this is due to the location of the mountains and the direction of the

winds. The larger part of Australia is a low plateau, with the chief mountain range on the eastern side. Point out these mountains. What are they named?



FIG. 304.—A kangaroo. Notice how small the fore legs are, since they are so little used, while the tail and hind legs, used in jumping, are very large.

The prevailing winds come from the southeast, so that they must blow over these mountains before reaching the interior. This causes heavy rainfall on the eastern slopes, but as the winds continue on toward the interior, they become very dry. At a distance of one hundred and fifty miles from the coast, it is so

dry that farming without irrigation is impossible. Still farther west, there are extensive deserts. How does this resemble the conditions in the northwestern part of our own country (p. 144)?

If you examine the map, you will see signs of the desert, for some of the rivers flow into lakes that have no outlet. These lakes, therefore, are salt, like the Great Salt Lake of Utah. There is so little rainfall in the interior that the Murray River becomes smaller toward its mouth, and its chief tributary, the Darling, dries up almost entirely in its lower course.

When it is remembered that the northern part of Australia has a tropical climate, and that the central and western parts are arid or desert, it is easy to understand why most of the people live in the southeastern part. What good farm land there is, is found mainly here; here is the chief river, the Murray, and here are the principal cities.

Finding the native plants and animals of little use, the English began to import some. Sheep, for ^{Agricultural} _{products} instance, were taken there and found to thrive. The best sections for sheep raising are Victoria and New South Wales (Fig. 305), where wool has become one of the chief exports. Indeed, Australian wool is considered the best in the world. Cattle were also imported, so that hides and meat are produced in abundance. A large portion of the wool, hides, and meat, used in England, is supplied by Australia.

Wheat and corn also flourish; and many fruits and vegetables, such as we raise in our country, are grown in southeastern Australia and in Tasmania. Farther north, in the torrid zone, tropical fruits are raised, and there are also valuable products from the tropical



FIG. 305.—A flock of sheep in the sheep raising country of New South Wales in Australia.

forests. Between this and southern Australia, sugar, cotton, and rice are raised.

Australia is a noted mineral region, producing gold especially. For many years this continent has ^{Minerals} ranked as one of the leading gold-producing regions of the world. Silver, copper, iron, coal, and other mineral products are also mined here.

Manufacturing is not yet greatly developed in Australia, so that most ^{Manufactures} of the wool, hides, and metals, are exported; and since this is a British colony, they go mainly to England. Some of the imports, many of which are received from England, you can probably name. Gradually, however, the Australians are developing manufacturing, and are thus coming to depend upon themselves.

Since the people and industries are found mainly in the humid southeastern part of Australia, we see why ^{Principal cities} several large cities have grown up in that section. The largest is SYDNEY, the capital of New South Wales. Next in size is MELBOURNE, the capital of Victoria and the principal seaport. ADELAIDE, the capital of South Australia, is the third city in size. Each of these cities has an excellent harbor. What is the capital and chief city of Tasmania? Of Queensland?

2. New Zealand

Southeast of Australia are two large islands forming the British colony of New Zealand. How far is New Zealand from Australia? It does not form a part

of the Australian Commonwealth, just as Newfoundland does not form a part of the Dominion of Canada (p. 175).

The surface of these islands is very rugged, and there is much wonderful



FIG. 306.—One of the grand fiords on the coast of New Zealand, where there is some of the finest scenery in the world.

scenery (Fig. 306). The mountains are very grand, and some of the highest peaks are volcanic cones. Heavy snow falls upon the high mountains, and from these snow fields large glaciers descend through the mountain valleys. There are also hot springs and geysers here, as in our Yellowstone National Park (p. 156).

The climate of New Zealand resembles that of Australia, although it has more abundant rainfall. The products, also, are much the same. It is a very progressive country, with many valuable resources and much manufacturing.

3. The East Indies

Between Australia and Asia there are hundreds of islands, most of them too small to be shown upon the map. Some of them, however, are very large. Java, for instance, is about the size of the

state of New York, and Borneo is about six times as large. All these islands together form a group, or archipelago, known as the East Indies. What other large islands do you find among them? In what zone do they lie? What, therefore, is their climate? In what direction from them are the Philippine Islands?

On the East Indian Islands, with their hot, damp climate, there are extensive forests containing many kinds of valuable tropical woods. Also, besides Java coffee, which is well known, tea, spices, indigo, rice, sugar cane, tobacco, cotton, and grain

are important products. From the very earliest times, too, this region has been noted for its precious stones (p. 228).

It was these islands, as well as India and the Malay Peninsula, that Columbus was trying to reach. Their products are so valuable that the European nations have eagerly taken possession of them. England, as usual, has a part. Point it out. This time, however, she has not obtained the lion's share. That belongs to the little country of Holland. Name the large islands that are controlled wholly, or in part, by the Dutch.

4. Islands of the Pacific

There are many hundreds of islands in the Pacific Ocean. You have already learned the names of some of these which are possessions of the United States (p. 163). Give their names and locate them on the map (Fig. 106).

New Guinea One of the largest islands in this region is New Guinea, just north of Australia, which is not usually classed as one of the East Indian Islands. In what zone does it lie? Among what three nations is it divided? All of its products are tropical, and it is covered with a dense forest, inhabited by fierce savages. Very few Europeans live there.

Among the smaller groups are the Fiji Islands. Find these. To what country do they belong? What two groups lie west of the Fiji Islands? Northeast of the Fiji Islands are the Samoa Islands, one of which, as you know, belongs to the United States.

Review Questions

1. Describe the government of Australia.
2. What is there peculiar about the native plants, animals, and people?
3. What use was first made of Australia?
4. What is the population?
5. In what part of Australia do most of the inhabitants live, and why there?
6. What are the agricultural products?
7. The minerals?
8. Tell about the manufactures.
9. Locate the principal cities.
10. Tell about New Zealand.
11. Where are the East Indies?
12. What are the names of the principal islands? What about their size?
13. What are their products?
14. What countries

control them?

15. Name several groups of islands in the Pacific that belong to the United States.
16. Tell about New Guinea.
17. Name other island groups in the Pacific.

Suggestions

1. What other countries, besides Australia, are especially noted for cattle and sheep?
2. For gold mining?
3. Read about the trouble caused by rabbits that were imported into Australia.
4. Name and locate the principal desert regions on the earth.
5. Make a sketch map of Australia, putting in the principal mountains, rivers, and cities.
6. Find what spices are used in cooking at your home.

XVI. REVIEW OF THE UNITED STATES AND OTHER GREAT POWERS

We have seen that there are six nations of Europe that are called Great Powers, or World Powers. Name each of them (p. 188). The United States makes a seventh World Power, and Japan an eighth.

The Great Powers of the world, and their forms of government

Give the principal boundaries of each. Which two have a republican form of government? Which one is an absolute monarchy (p. 203)? What form



FIG. 307.—A village in New Guinea, where the houses are built on posts rising above the water.

of government have the other five? Each of the other nations on the earth is called a "Minor" or Lesser Power, being much weaker than any one of the eight World Powers.

On what continent is each of the eight World Powers located? What continents, therefore, contain no Great Powers?

Continents and zone to which the World Powers belong

In what zone does the United States lie? In what zone is the

WORLD GEOGRAPHY

ion of the other World Powers? give any reasons why the chief of the earth are found in the te zone? greatest of these eight Powers,

sions of the United States, as shown in Figure 310. Of Russia; Germany; France.

It should be remembered that the eight World Powers mentioned are not

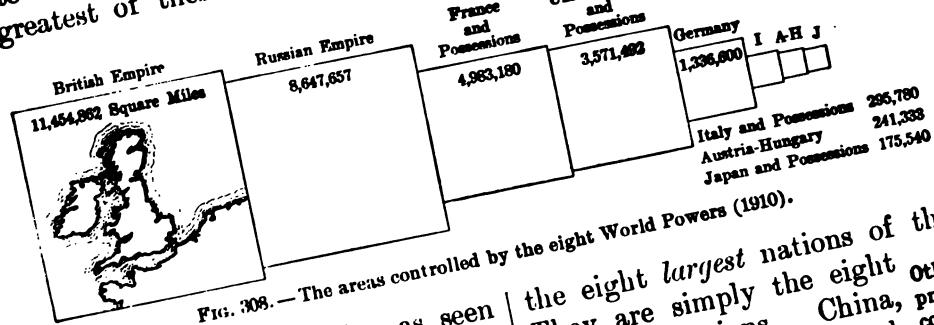


FIG. 308.—The areas controlled by the eight World Powers (1910).

area, is the British Empire, as seen in Figure 308. What is the rank in area of each of the others?

In Figure 309 the British Empire is seen also to have the greatest population of the

eight. What is the rank of each of the

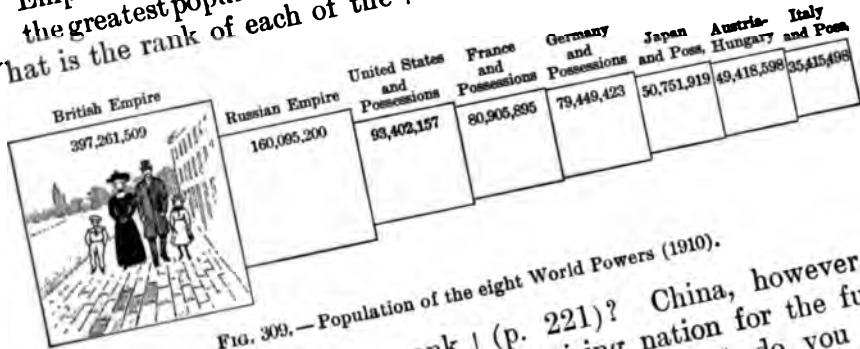


FIG. 309.—Population of the eight World Powers (1910).

others in population? What is the rank of our country in area and population compared with the other World Powers?

The Power that has the greatest foreign possessions is the British Empire. In Figure 310 point out the principal foreign possessions of the British. Can you account in some way for the fact that the

Dependencies of the Great Powers

(p. 221)? China, however, is promising nation for the future (p. 222)? What do you know about its occupations (pp. 222-223)?

Argentina is the most two nations of that continent compared with Argentina (pp. 182, 184)? Tell the facts about each. How does B

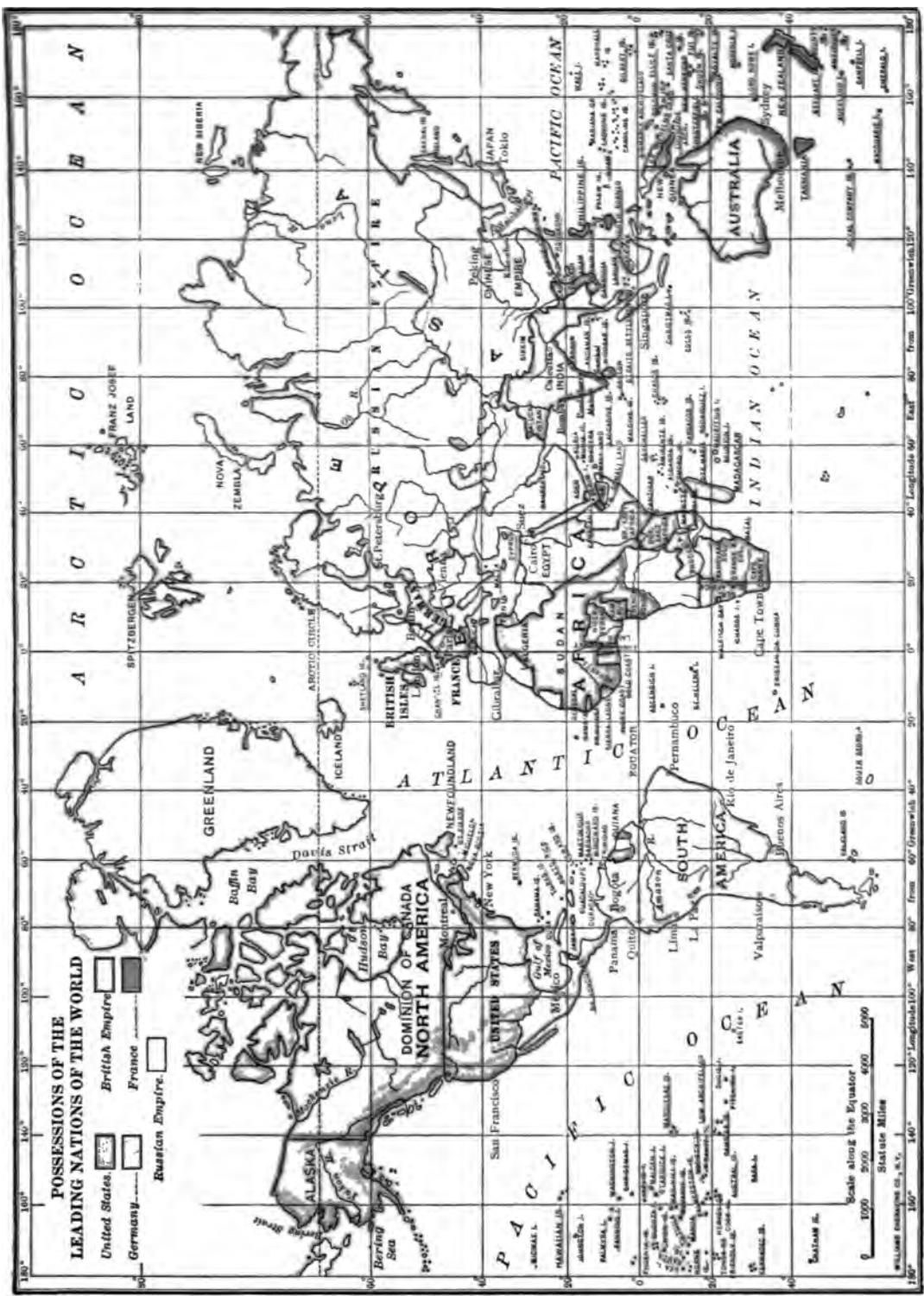


FIG. 310.



with the Great Powers in area? (See table on p. 255.)

About one person in eight now living in

cultural products? Where is each raised? What parts of our country receive too little rain for farming? What is the

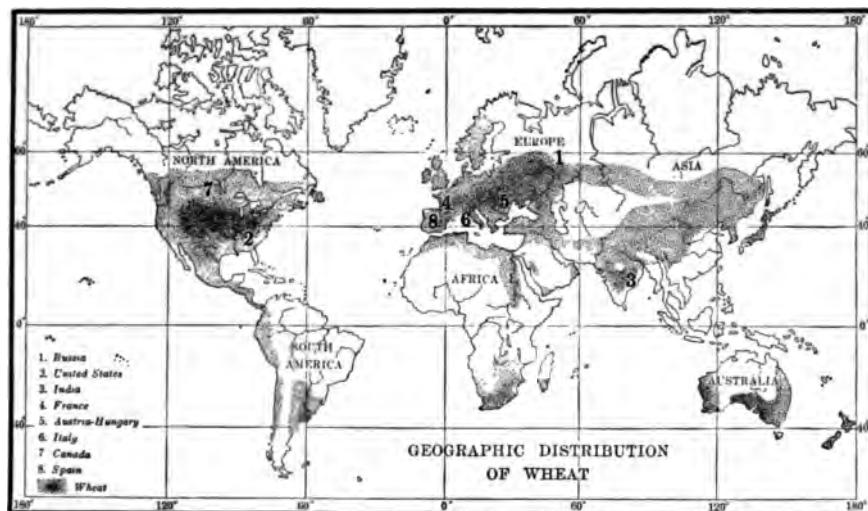


FIG. 311.—Wheat regions of the world

the United States came here from some immigrants to other land. Figure 235 shows which country has been sending us the greatest number. Which ranks second in this respect? Can you name other countries not named in this diagram that have sent us immigrants? Which of the Great

leading industry there? In what parts is irrigation important?

What are the principal agricultural products of the British Isles (p. 189)? Of Germany (p. 193)? Of France (p. 195)? Of Russia (p. 203)? Of Italy (p. 198)? Of Austria-Hungary (p. 201)? Of Japan (p. 225)? Which of these na-

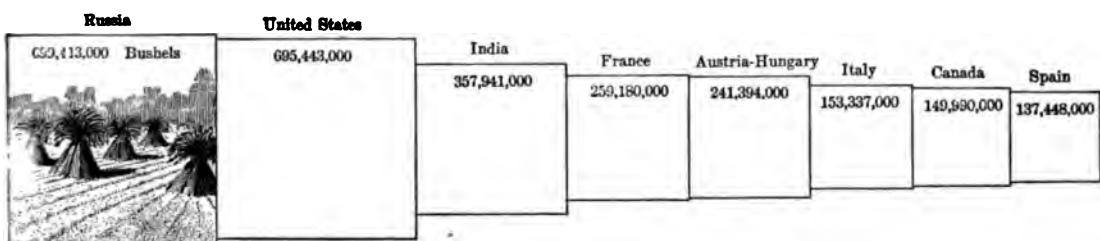


FIG. 312.—The eight leading wheat producing regions of the world (1910).

Powers has been sending us most immigrants? Which have sent very few?

Agriculture is the greatest industry in the United States, giving occupation to more than one third of all the workers in the country. What are our chief agri-

tions depends most upon foreign countries, or upon its dependencies, for food?

In what countries is *wheat* extensively raised (Fig. 311)? Note the rank of the leading wheat-producing countries of the world (Fig. 312).

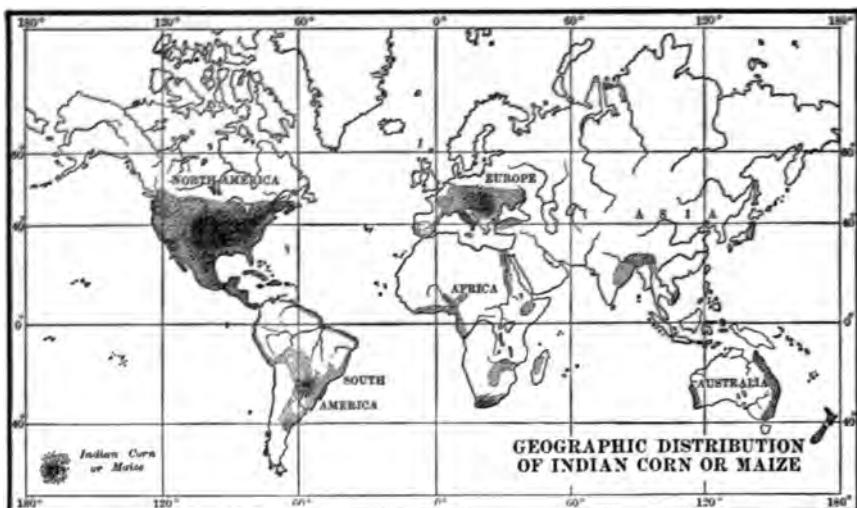


FIG. 313.—Map showing the principal Indian corn (maize) producing regions of the world.

Figure 313 shows the parts of the world that produce corn. Which one of the Great Powers grows the largest amount? Which of them produce little of it?

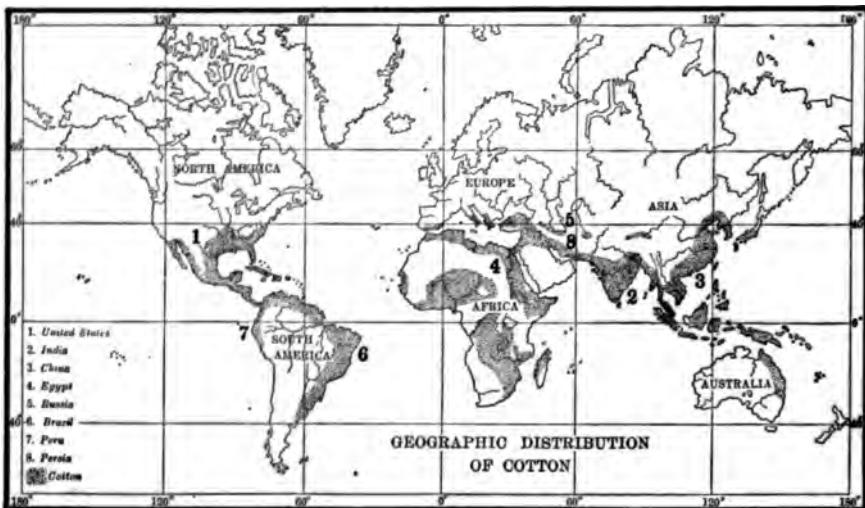


FIG. 314.—Map showing principal cotton producing regions of the world.

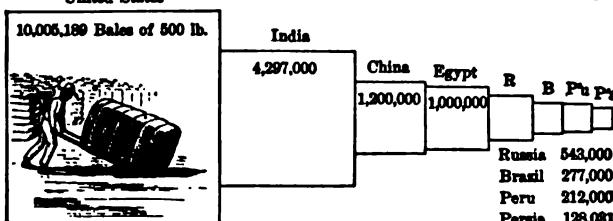


FIG. 315.—The eight chief cotton producing countries of the world (1910).

Is cotton more, or less widely cultivated than corn (Fig. 314)? What parts of the world mainly produce it? Which of the Great Powers raise a large amount of it? What do you learn from Figure 315?



FIG. 316.—Map to show the principal sheep raising sections of the world.

In Figure 316 note the distribution of cattle and sheep. What countries are important for grazing? What useful products are obtained from these animals besides meat? From your study about the countries of the world, name some which produce quantities of sugar

What about mining in the United States? In the British Isles (p. 190)? In Germany (p. 194)? In France (p. 196)? In Russia (p. 203). In Italy (p. 198)? In Austria-Hungary (p. 202)? In Japan (p. 226)?

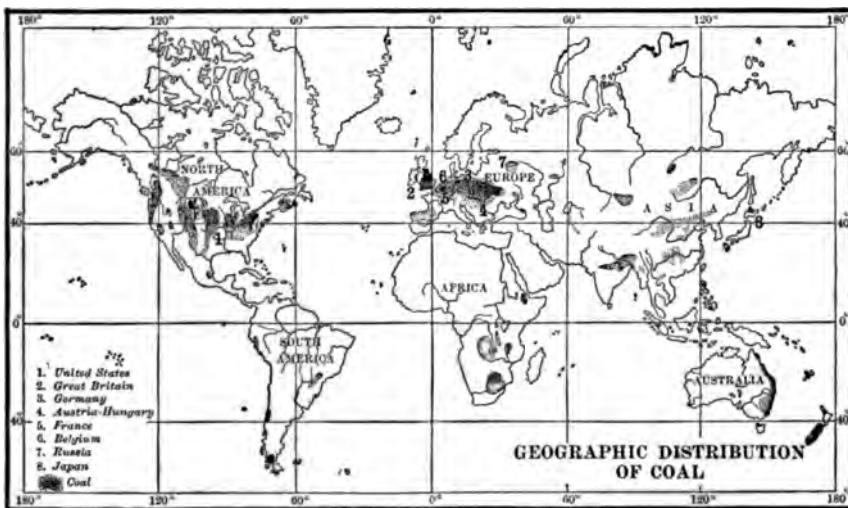


FIG. 317.—Map to show the principal coal bearing regions of the world.

cane; grapes; oranges; tobacco; coffee;

Figure 317 shows the parts of the tea; rice; raw silk; lumber; rubber. world that have much coal. Which

of the Great Powers are important in that industry? Which one is not? No

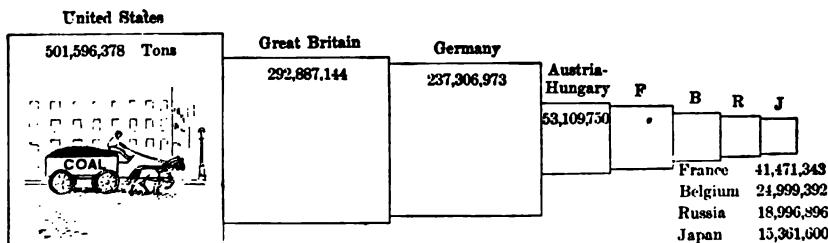


FIG. 318.—The eight leading coal producing countries of the world (1910).

tice the rank of the Great Powers in coal production as shown in Figure 318.

What about manufacturing in the United States? In the British Isles

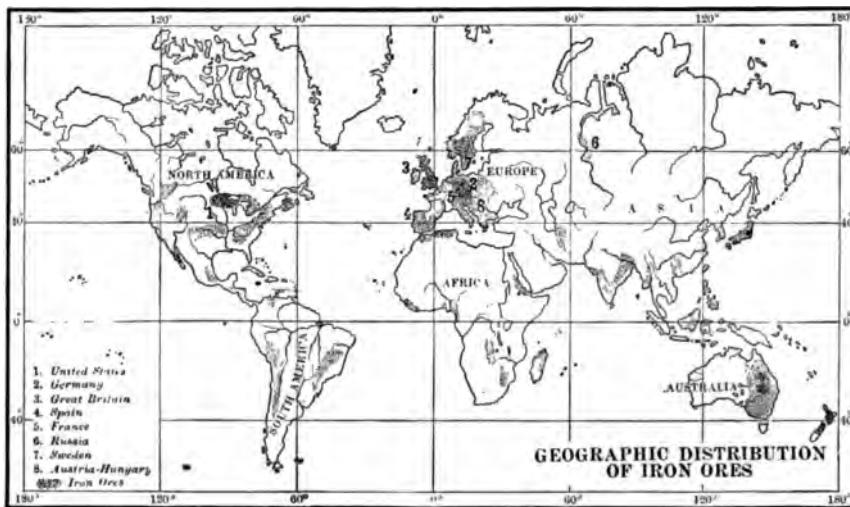


FIG. 319.—Map showing the principal regions of the world where iron ore is found.

In Figure 319 iron ore is shown to be widely distributed. What countries produce much of it? Figure 320 shows the rank of the six leading iron-mining countries. Which of these countries

(p. 190)? In Germany (p. 194)? In France (p. 196)? In Italy Manufacturing (p. 198)? In Austria-Hungary (p. 202)? In Russia (p. 203)? In Japan (p. 226)?

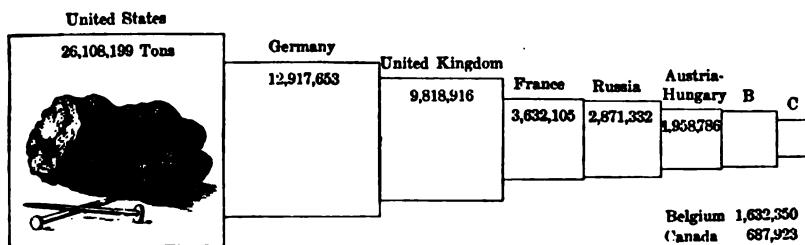


FIG. 320.—The six leading iron producing countries of the world (1910).



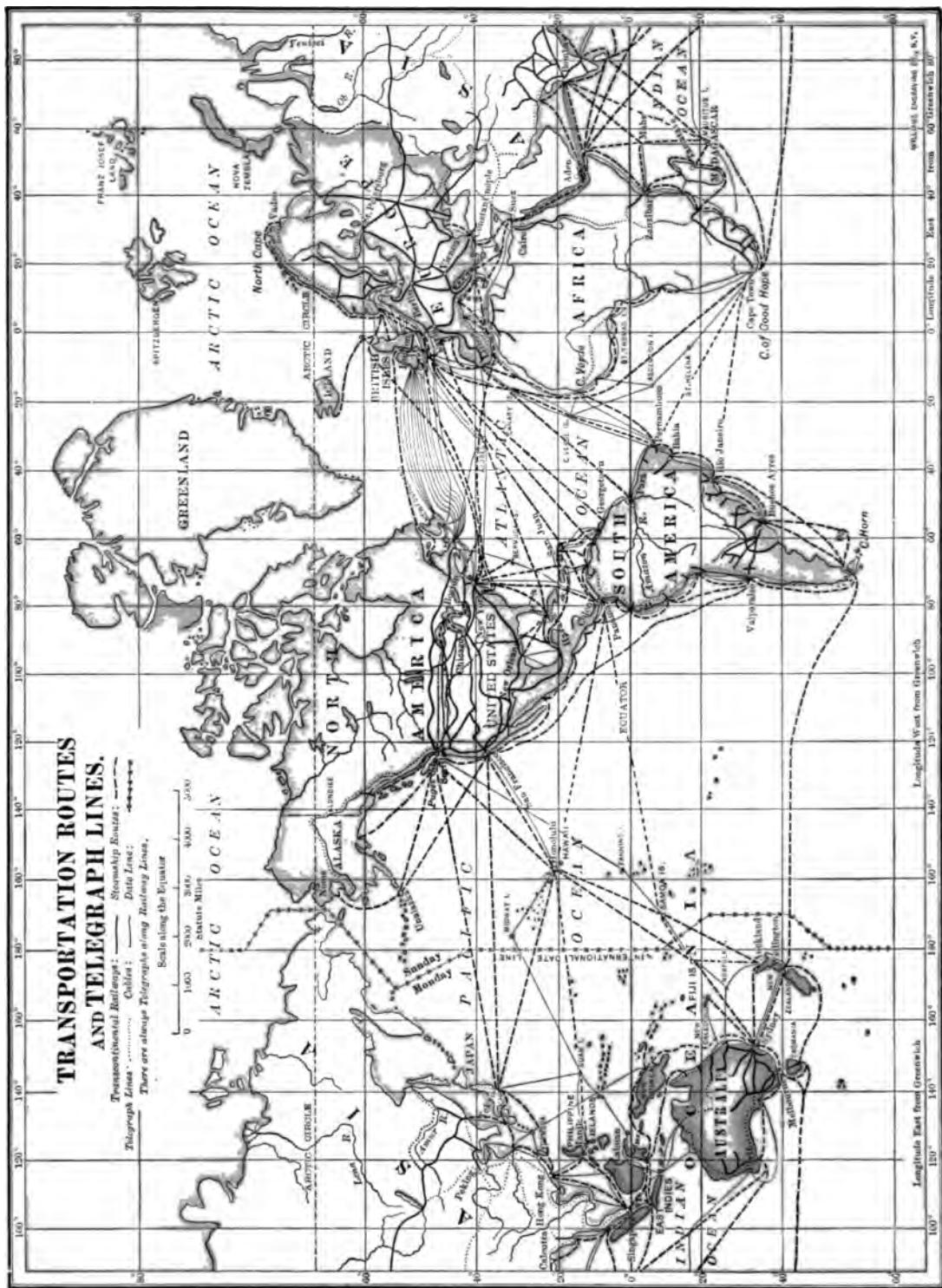


FIG. 323.

According to Figure 321, what parts of the world are very important in manufacturing? Which of the Great Powers have little of it? What Lesser

what you can about each of the twenty-five.

Figure 323 shows the principal transportation routes of the world. Which

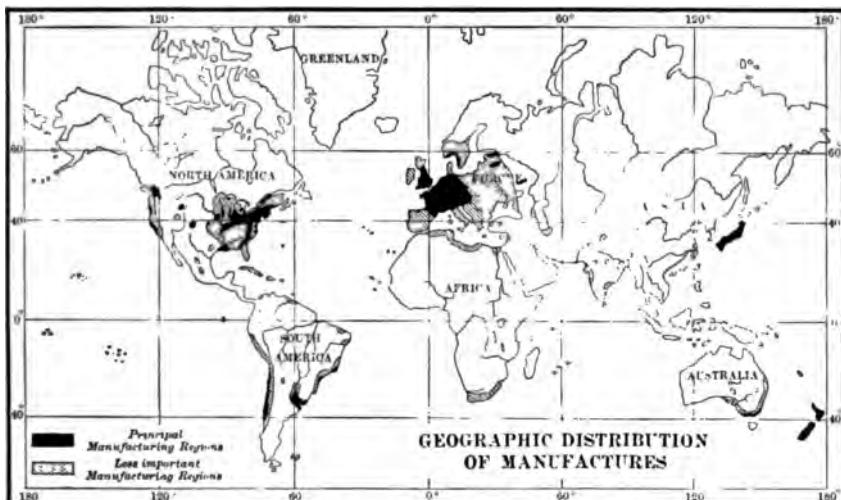


FIG. 321.—Map to show the principal manufacturing sections of the world.

Powers of Europe do much manufacturing (pp. 208, 212)? Note the rank of the leading manufacturing countries of the world in Figure 322.

Tell about trade and transportation, or commerce, in the United States; in the British Isles (p. 191); in Germany (p. 194); in France (p. 196); in Italy (p. 199); in Austria-Hungary (p. 202); in Russia (p. 204); in Japan (p. 227).

In the Appendix, page 257, you will find a list of the twenty-five largest cities of the world. Locate each of them. How many of these cities has each of the World Powers? Which of them belong to the Lesser Powers of the world? Tell

ocean has the greatest commerce? Why? What cities are connected by the lines showing routes across the Atlantic Ocean? What are the chief routes of commerce on the Pacific? How is the importance of the Suez Canal shown

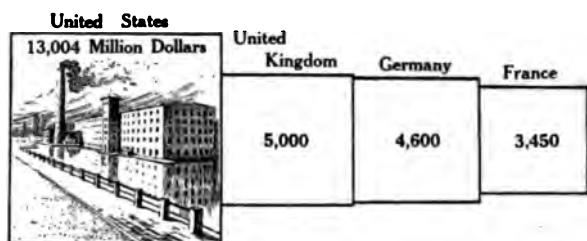


FIG. 322.—In this diagram is given the number of million dollars' worth of manufactured goods produced by the four leading manufacturing nations in the world.

in this figure? What countries will be greatly benefited by use of the Panama Canal.

APPENDIX I

REFERENCES TO DESCRIPTIONS, IN PROSE AND POETRY, OF TOPICS TREATED IN THIS GEOGRAPHY. FOR TEACHER AND PUPIL

McM. means The Macmillan Co., New York; **Ginn**, Ginn & Co., Boston, Mass.; **A.B.C.**, American Book Co., New York; **S.B.C.**, Silver, Burdett & Co., New York; **Heath**, D. C. Heath & Co., Boston; **E.P.C.**, Educational Publishing Co., Boston; **Scribner**, C. Scribner's Sons, New York; **L.S.**, Lothrop, Lee, Shepard, Boston; **Ap.**, D. Appleton & Co., New York; **R.Mc.**, Rand, McNally & Co., Chicago; **E.P.D.**, E. P. Dutton & Co., Boston.

METHODS AND AIDS. — Geikie, "The Teaching of Geography" (McM., \$0.60); King, "Methods and Aids in Geography" (L.S., \$1.20); Parker, "How to Study Geography" (Ap., \$1.50); Trotter, "Lessons in the New Geography" (Heath, \$1.00); McMurry, "Special Method in Geography" (McM., \$0.70); Frye, "The Child and Nature" (Ginn, \$0.80); Frye, "Teacher's Manual of Methods in Geography" (Ginn, \$0.50); Redway, "Manual of Geography" (Heath, \$0.65).

JOURNALS. — *Journal of School Geography* (R. E. Dodge, Teachers College, Columbia University, New York City, \$1.00 per year); *National Geographic Magazine* (Washington, D.C., \$2.50; includes membership to Society).

STANDARD REFERENCE WORKS. — "The Statesman's Year Book," published each year, gives latest statistics, etc. (McM., \$3.00); Mill, "Hints to Teachers and Students on the Choice of Geographical Books" (Longmans, Green & Co., New York, \$1.25); Mill, "International Geography" (Ap., \$3.50).

GEOGRAPHY READERS, ETC. — Strong, "All the Year Round" (Ginn, three volumes, \$0.30 each); Carpenter, "Geographical Readers" (A.B.C., \$0.60 per volume); Payne, "Geographical Nature Studies" (A.B.C., \$0.25); Fairbanks, "Home Geography for Primary Grades" (E.P.C., New York, \$0.60); Youth's Companion Series (Ginn, \$0.25 to \$0.40); Starr's "Strange Peoples" (Heath, \$0.40); Lyde, "Man and His Markets" (McM., \$0.50); Herbertson, "Man and His Work" (McM., \$0.60); Pratt, "American History Stories" (E.P.C., four volumes, \$0.36 each); Pratt, "Stories of Colonial Children" (E.P.C., \$0.40).

COMMERCIAL AND PHYSICAL GEOGRAPHY. — Chisholm, "Commercial Geography" (Longmans, Green & Co., New York, \$0.90); Adams, "Commercial Geography" (Ap., \$1.80); Shaler, "First Book in Geology" (Heath, \$0.60); Tarr, "Elementary Geology" (McM., \$1.40); Tarr, "New Physical Geography" (McM., \$1.00).

FOOD, CLOTHING, AND SHELTER. — Fairbanks, "Home Geography," the following topics: "Our Homes," "Homes of the Animals," etc. (E.P.C., \$0.60); Chamberlain's "Home and World Series," four vols. (McM. \$0.40 each); Payne's "Geographical Nature Studies," "Shelter," "Our Shelter," etc. (A.B.C., \$0.25); Starr, "Strange Peoples," "Eskimo," "Negroes," etc. (Heath, \$0.40); Youth's Companion Series, "Strange Lands Near Home," "The Play of Eskimo Boys," "The Home of the Icebergs" (Ginn, \$0.25); Youth's Companion Series, "Under Sunny Skies," "Across the Desert," "From Tangier to Tétuan," etc. (Ginn, \$0.25).

THE SOIL. — King, "The Soil" (McM., \$1.25); Tarr, "Elementary Geology," Chapters VI, XI, and pp. 475-487 (McM., \$1.40); Shaler, "First Book in Geology," pp. 24-29 (Heath, \$0.60). *Nature Study Quarterly*, No. 2, October, 1899 (Cornell University, College of Agriculture, Ithaca, N.Y. Free on application); Kingsley, "Madam How and Lady Why," Chapter IV, "The Transformation of a Grain of Soil" (McM., \$0.50); Frye, "Brooks and Brook Basins," section on "How Soil is Made and Carried" (Ginn, \$0.50).

HILLS AND VALLEYS. — Whittier, "Among the Hills" (poem); Whittier, "The Hilltop" (poem); Hutchinson, "The Story of the Hills" (McM., \$1.50); see also under "Rivers and River Valleys."

MOUNTAINS. — Avebury, "The Beauties of Nature," Chapters V and VI (the former on forests) (McM., \$1.50); Jordan, "Science Sketches," section on "The Ascent of the Matterhorn" (A. C. McClurg & Co., Chicago, \$1.00); Tarr, "Elementary Geology," Chapter XVII (McM., \$1.40); Tarr, "New Physical Geography," Chapter VI (McM., \$1.00); Shaler, "First Book in Geology," Chapter V (Heath, \$0.60); Kingsley, "Madam How and Lady Why," Chapter V, "The Ice Plough" (McM., \$0.50); Fairbanks, "Home Geography for Primary Grades," sections on "The Story of a Mountain," and "What We Learned by Climbing a Mountain" (E.P.C., \$0.60); Youth's Companion Series, "Strange Lands Near Home," section on "A Growing Mountain" (Ginn, \$0.25); "Under Sunny Skies," section on "Mount Vesuvius" (Ginn, \$0.25).

RIVERS AND RIVER VALLEYS. — Tarr, "Elementary Geology," Chapters VI-X (McM., \$1.40); Tarr, "New Physical Geography," Chapter IV (McM., \$1.00); Shaler, "First Book in Geology," Chapter VI (Heath, \$0.60); Payne, "Geographical Nature Studies," sections on "Valleys," "Plants of

the Valleys," and "Animals of the Valleys," etc. (A.B.C., \$0.25); Kingsley, "Madam How and Lady Why," Chapter I, "The Glen" (McM., \$0.50); Frye, "Brooks and Brook Basins" (Ginn, \$0.50); Avebury, "The Beauties of Nature," Chapters VII and VIII (McM., \$1.50); Parker and Helm, "Uncle Robert's Geography," Vol. III, Chapters XII and XIV (\$0.50); Poems: "The Brook," Tennyson; "The Mad River," Longfellow; "The Falls of Lodore," Southey; "The Brook and the Wave," Longfellow; "A Water Song," E. G. W. Rowe; "The Endless Story," A. K. Eggleston; "The Impatient River," E. G. W. Rowe; the last three in Payne's "Geographical Nature Studies" (A.B.C., \$0.25).

PONDS AND LAKES.—Shaler, "First Book in Geology," pp. 125-129 (Heath, \$0.60); Tarr, "Elementary Geology," pp. 188-193 (McM., \$1.40); Tarr, "New Physical Geography," Chapter IX, (McM., \$1.00); Avebury, "The Beauties of Nature," Chapter VIII (McM., \$1.50); Payne, "Geographical Nature Studies," section on "Pools, Ponds, and Lakes" (A.B.C., \$0.25); "The Lakeside," poem, by Whittier.

THE OCEAN.—Shaler, "Sea and Land" (Scribner, New York, \$2.50); Tarr, "New Physical Geography," Chapters X, XI (McM., \$1.00); Avebury, "The Beauties of Nature," Chapter IX (McM., \$1.50); Andrews, "Stories Mother Nature Told Her Children," section on "Sea Life" (Ginn, \$0.50); Holland, "The Sea Voyage," in "Arthur Bonnycastle"; Dickens, "David Copperfield," Chapter V; "Robinson Crusoe," Chapter III; Taylor, "The Waves," "Wind and Sea," in Marble's "Nature Pictures by American Poets" (McM., \$1.25); Coleridge, "The Ancient Mariner."

THE AIR.—Tarr, "New Physical Geography," Chapters XII-XIV (McM., \$1.00); "A Summer Shower," "Cornell Nature Study Bulletin," No. 1, June, 1899 (free on application to College of Agriculture, Cornell University, Ithaca, N.Y.); Murché, "Science Reader," Book III, sections on "Air," "Vapor in the Air," "Vapor; What Becomes of It?" "What the Atmosphere Is," "Ice, Hail, and Snow" (McM., \$0.40); Frye, "Brooks and Brook Basins," sections on "Forms of Water" and "The Atmosphere in Motion" (Ginn, \$0.50); Strong, "All the Year Round," Part II, sections 33-39 (Ginn, \$0.30); Andrews, "Stories Mother Nature told Her Children," section on "The Frost Giants" (Ginn, \$0.50); Payne, "Geographical Nature Studies," many excellent stories and poems (A.B.C., \$0.25); Marble, "Nature Pictures by American Poets"; "Summer Shower," Dickinson; "Rain," De Land; "Song of the Snowflakes," Cheney; "Cloudland" (McM., \$1.25); Wilson, "Nature Study in Elementary Schools," Second Reader, the following poems: "The Rain Shower," "The Wind Song," "The Bag of Winds," "The Sunbeams," "Snowflakes," "Signs of Rain," "The Rainbow" (McM., \$0.35); Lovejoy, "Nature in Verse," the following poems: "Merry Rain," "The Clouds," "The Dew," "The Fog," "The Rain," "The Snow," "The Frost," "Jack Frost," "Little snowflakes" (S.B.C., \$0.60); Shelley, "The Cloud"; Whittier, "The Frost Spirit"; Bryant, "The Hur-

ricane"; Whittier, "Snow-bound"; Irving, "The Thunderstorm" (prose).

INDUSTRY, COMMERCE, AND GOVERNMENT.—Payne, "Geographical Nature Studies," sections on "Occupations," "Trade or Commerce," "Transportation by Land," "Transportation by Water," School and Country. (A.B.C., \$0.25); Andrews, "The Stories Mother Nature Told Her Children," section on "The Carrying Trade" (Ginn, \$0.50); Whittier, "Songs of Labor"; Brooks, "Century Book for Young Americans" (Century Co., New York, \$1.50); Brooks, "The Story of the United States" (The Lothrop Publishing Co., Boston, \$1.50); Wilson, "Nature Study in Elementary Schools," Second Reader, section on "Boyhood of Lincoln" (McM., \$0.35); Payne, "Geographical Nature Studies," section on "Government" (A.B.C., \$0.25).

MAPS.—Excellent outline maps of states and continents, costing 1½ to 2 cents each, can be purchased from D. C. Heath & Co., Boston; Rand, McNally & Co., Chicago; and other publishers. Maltby, "Map Modeling," (A. S. Barnes & Co., New York, \$1.25); Kellogg, "Geography by Map Drawing" (same publishers, \$0.30); Redway, "The Reproduction of Geographical Forms" (\$0.30) and "Teacher's Manual of Geography" (\$0.65) (both by Heath); Frye, "The Child and Nature" (Ginn, \$0.80); Frye, "Sand and Clay Modeling" (A.B.C., New York, \$0.10); Frye, "Teacher's Manual of Methods in Geography" (Ginn, \$0.50); Kellogg, "How to Teach Clay Modeling" (A. S. Barnes & Co., New York, \$0.25); King, "The Picturesque Geographical Readers," First Book, Lesson XIII (L.S., \$0.50).

FORM AND SIZE OF THE EARTH.—Andrews, "Seven Little Sisters," section on "The Ball Itself" (Ginn, \$0.50); Irving, "Life and Voyages of Christopher Columbus" (G. P. Putnam's Sons, New York, \$1.75); for Columbus, Magellan, etc., see various school histories. Also, poem on "Columbus" by Tennyson; D'Anvers, "Science Ladders," Vol. I (E.P.C., \$0.40); Gee, "Short Studies in Nature Knowledge," section on "The Great Globe Itself" (McM., \$1.10).

DAILY MOTION OF THE EARTH AND ITS RESULTS.—Redway, "Manual of Geography," Chapter VI (Heath, \$0.65); "Daybreak" (poem), Longfellow.

THE ZONES.—Eggleston, "Stories of American Life and Adventure," section on "Adventures in Alaska" (A.B.C., \$0.50); Andrews, "Seven Little Sisters," sections on "The Little Brown Baby," "Agooonack, the Esquiman Sister," and "How Agooonack Lives" (Ginn, \$0.50); Schwatka, "The Children of the Cold" (E.P.C., \$1.25); Ballou, "Footprints of Travel," Chapters XXIX and XXX (Ginn, \$0.60); King, "The Picturesque Geographical Readers," First Book, Part 2 (L.S., \$0.50).

THE CONTINENTS AND OCEANS.—Andrews, "Seven Little Sisters" (Ginn, \$0.50); Ballou, "Footprints of Travel" (Ginn, \$0.60); Kelly, "Leaves from Nature's Story Book," Vol. III, "A Visit to the Bottom of the Ocean" (E.P.C., \$0.40); Shaler, "The Story of Our Continent," section on "Coral Reefs" (Ginn, \$0.75); Tarr, "Elementary Geology," p. 251 (McM., \$1.40); D'Anvers, "Science Ladders," Vol. III, Lesson VIII (E.P.C., \$0.40); Youth's Com-

panion Series, "Strange Lands Near Home" and "The Wide World" (Ginn, each \$0.25); Andrews, "Each and All" (L.S., \$1.00); Miller, "Little People of Asia" (E.P.D., \$2.50); Schwatka, "Children of the Cold" (E.P.C., \$1.25); Shaw, "Big People and Little People of Other Lands" (A.B.C., \$0.30); Poems: Shelley, "A Vision of the Sea"; Longfellow, "The Secret of the Sea"; Longfellow, "The Wreck of the Hesperus"; Holmes, "The Chambered Nautilus"; Byron, "The Ocean."

NORTH AMERICA.—Shaler, "The Story of Our Continent" (Ginn, \$0.75); Lyde, "North America" (McM., \$0.50); McMurry, "Excursions and Lessons in Home Geography," (McM. \$0.50); Adams, "An Elementary Commercial Geography" (Ap., \$1.10); Gannett, Garrison, and Houston, "Commercial Geography" (A.B.C., \$1.25); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Carpenter, "Geographical Reader," North America (A.B.C., \$0.60); Chase and Clow, "Stories of Industry," Vols. I and II (E.P.C., \$0.40).

THE UNITED STATES.—Brooks, "Century Book for Young Americans" (The Century Co., New York, \$1.50); Brooks, "The Story of the United States" (L.S., \$1.50); Channing, "Students' History of the United States" (McM., \$1.40); Ballou, "Footprints of Travel," Chapters I and XXV (Ginn, \$0.60); Gannett, "The United States," Stanford, "Compendium of Geography" (Scribner, \$5.50); Eggleston, "Stories of American Life and Adventure," "Stories of Whaling," and "A Whaling Song," "A Story of Niagara," "How Frémont Crossed the Mountains," "The Finding of Gold in California," "Descending the Grand Cañon," and several Indian stories, (A.B.C., \$0.50); Chase and Clow, "Stories of Industry," Vol. I, "Lumbering," "Ship Building," "Marble and Granite," "Slate and Brick," etc., Vol. II, "Manufacturing," "Fisherries," "Whaling," etc. (E.P.C., each volume \$0.40); King, "The Picturesque Geographical Readers," Third and Fourth Books (L.S., \$0.50); Carpenter, "Geographical Readers," "North America" (A.B.C., \$0.60); Wilson, "Nature Study in Elementary Schools," Second Reader, "The Tree," by Björnson (McM., 0.35); McMurry, "Pioneer Stories of the Mississippi Valley" (Public School Publishing Co., Bloomington, Ill., \$0.50); Ballou, "Footprints of Travel," Chapter XXV (Ginn, \$0.60); Chase and Clow, "Stories of Industry," Vol. I, several sections on "Mines and Mining" (E.P.C., \$0.40); Shaw, "Big People and Little People of Other Lands," section on "The Indians" (A.B.C., \$0.30); Youth's Companion Series, "The Wide World," section on "Barbarian Babies" (Ginn, \$0.25); Poems: Whittier, "Mogg Megone," "Pentucket," "The Bridal of Pennacook," "The Merrimack," "The Norsemen"; Longfellow, "The Woods in Winter," "The Building of the Ship," "The River Charles"; Emerson, "Boston"; Riley, "When the Frost is on the Punkin," "Knee Deep in June"; Bryant, "The Prairies," "The Hunter of the Prairies"; Whittier, "The Pass of the Sierra"; Joaquin Miller, "In the Yosemite Valley"; Holmes, "Our Country."

ALASKA.—Ballou, "Footprints of Travel," Chapter XXVI (Ginn, \$0.60); Eggleston, "Stories of

American Life and Adventure," "Adventures in Alaska" (A.B.C., \$0.50); Carpenter, "Geographical Reader," North America (A.B.C., \$0.60); Youth's Companion Series, "The Wide World," section on "The Alaska Eskimo" (Ginn, \$0.25).

OTHER COUNTRIES OF NORTH AMERICA.—Coe, "Our American Neighbors," Chapters I-XVII (S.B.C., \$0.60); Andrews, "Seven Little Sisters," the two sections on "Agoonack" (Ginn, \$0.50); Schwatka, "The Children of the Cold" (E.P.C., \$1.25); Gee, "Short Studies in Nature Knowledge" (McM., \$1.10); Peary, "The Snow Baby" (Stokes, New York, \$1.20); Shaw, "Big People and Little People of Other Lands," section on "Greenland" (A.B.C., \$0.30); "An Arctic Vision," Bret Harte; "Evangeline," Longfellow; Lyde, "A Geography of North America" (McM., \$0.50); Ballou, "Footprints of Travel," Chapters XXIII, XXIV, XXV, XXVII, and XXVIII (Ginn, \$0.60); Youth's Companion Series, "Strange Lands Near Home," and "The Wide World," section on "The Boys of Mexico" (Ginn, \$0.25).

SOUTH AMERICA.—Ballou, "Footprints of Travel," Chapters XXIX-XXXI (Ginn, \$0.60); Coe, "Our American Neighbors" (S.B.C., \$0.60); Youth's Companion Series, "Strange Lands Near Home" (Ginn, \$0.25); Carpenter, "Geographical Reader" "South America" (A.B.C., \$0.60); Starr, "Strange Peoples," section on "South American Peoples" (Heath, \$0.40).

EUROPE.—Lyde, "A Geography of Europe" (McM., \$0.50); Ballou, "Footprints of Travel," Chapters X-XXII (Ginn, \$0.60); Coe, "Modern Europe" (S.B.C., \$0.60); Pratt, "Northern Europe" (E.P.C., \$0.40); Lyde, "A Geography of the British Isles" (McM., \$0.60); King, "The Picturesque Geographical Readers," Sixth Book (L.S., \$0.60); Pratt, "Stories of England" (E.P.C., \$0.40); Andrews, "Seven Little Sisters," "The Little Mountain Maiden," and "Louise" (Ginn, \$0.50); Reynolds's "Regional Geography," "Europe" (A. & C. Black, London, 2s.); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Shaw, "Big People and Little People of Other Lands" (A.B.C., \$0.30); Youth's Companion Series, "Northern Europe" and "Under Sunny Skies" (Ginn, \$0.25 each); Chase and Clow, "Stories of Industry" (E.P.C., \$0.40); Carpenter, "Geographical Reader" on "Europe" (A.B.C., \$0.60); Poems: Alice Cary, "The Leak in the Dike"; Longfellow, "Venice," "The Belfry of Bruges," "Nuremberg," "To the River Rhone," "To the Avon"; Joaquin Miller, "Sunrise in Venice," "In a Gondola," "To Florence"; Shelley, "Ode to Naples."

ASIA.—Ballou, "Footprints of Travel," Chapters III, VIII, and IX (Ginn, \$0.60); Andrews, "Seven Little Sisters," "The Story of Pen-se," also "Gemila" (Ginn, \$0.50); Smith, "Life in Asia" (S.B.C., \$0.60); Pratt, "Stories of India" (E.P.C., \$0.40); Pratt, "Stories of China" (E.P.C., \$0.40); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Youth's Companion Series, "Toward the Rising Sun," and "The Wide World" (Ginn, \$0.25 each); Carpenter, "Geographical Readers," "Asia" (A.B.C., \$0.60); Miller, "Little People of Asia" (E.P.D., \$2.50); Poems by Whittier;

"The Holy Land," "Palestine," "The Pipes of Lucknow."

AFRICA.—Lyde, "A Geography of Africa" (McM., \$0.50); Ballou, "Footprints of Travel," Chapters IX and X (Ginn, \$0.60); Badlam, "Views in Africa" (S.B.C., \$0.65); Andrews, "Seven Little Sisters," section on "The Little Dark Girl" and "Gemila" (Ginn, \$0.50); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Youth's Companion Series, "The Wide World," sections on "Some Little Egyptians," "A School in Cairo" (Ginn, \$0.25); Carpenter, "Geographical Readers" (Ginn, \$0.25).

on "Africa" (A.B.C., \$0.35); Chase and Clow, "Stories of Industry," Vols. I and II (E.P.C., \$0.40).

AUSTRALIA, etc.—Ballou, "Footprints of Travel," Chapters II, IV, V, VI, VII (Ginn, \$0.60); Kellogg, "Australia and the Islands of the Sea" (S.B.C., \$0.68); Pratt, "Stories of Australasia" (E.P.C., \$0.40); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Redway, "Commercial Geography" (Scribner, \$1.25); Starr, "Strange Peoples" (Heath, \$0.40); Chase and Clow, "Stories of Industry," Vols. I and II (E.P.C., \$0.40); Poem, "Western Australia," O'Reilly.

APPENDIX II

TABLES OF STATISTICS

NOTE. — The figures 1900, 1910, etc., refer to the year in which the Census was taken or the estimate was made. Most of the figures are obtained from the U. S. Census Reports, the "Statesman's Year Book," or from Gannett's "Statistical Abstract of the World."

SIZE OF THE EARTH		Area in Square Miles	Population
LENGTH OF THE EARTH'S DIAMETER at equator (miles)	7,996		
LENGTH OF THE EQUATOR (miles)	24,902		
THE EARTH'S SURFACE (square miles)	194,940,000		
Pacific Ocean (square miles)	55,660,000		
Atlantic Ocean (square miles)	38,720,000		
Antarctic Ocean and the great southern sea surrounding the south pole (square miles)	30,605,000		
Indian Ocean (square miles)	16,720,000		
Arctic Ocean (square miles)	4,751,000		
The Sea (square miles)	141,496,000		
CONTINENTS AND PRINCIPAL COUNTRIES			
	Area in Square Miles	Population	
NORTH AMERICA	8,500,000	125,000,000	
United States	3,026,789	91,972,266	
United States (with Alaska, etc.)	3,624,122	93,402,151	
Mexico	167,005	15,063,207	
Canada	3,603,910	7,192,338	
Newfoundland	42,784	287,531	
Central America	200,865	5,077,169	
Cuba	41,000	2,150,112	
Panama	31,500	1909	419,029
SOUTH AMERICA	7,400,000	49,000,000	
Brazil	3,218,991	1908	21,461,100
Argentina	1,185,840	1911	7,171,910
Peru	605,788	1905	4,500,000
Chile	292,580	1910	3,329,030
Colombia	485,100	1910	4,320,000
Bolivia	605,400	1910	2,267,935
Venezuela	398,978	1911	2,718,768
Ecuador	110,000	1910	1,500,000
Paraguay	171,204	1910	752,000
Uruguay	72,210	1910	1,112,000
EUROPE	8,000,000	433,000,000	
Russia	1,802,524	1910	185,869,400
German Empire	208,780	1910	64,908,428
Austria-Hungary	261,100	1910	51,928,921
France	207,054	1911	39,601,509
British Isles	121,390	1910	45,469,564
Italy	110,039	1910	84,269,746
Spain	104,788	1910	19,508,068
Turkey in Europe	65,850	1909	6,180,200
Norway	124,180	1910	2,892,898
Sweden	172,876	1910	5,521,948
Denmark	15,562	1911	2,775,076
The Netherlands	12,648	1910	5,945,155
Belgium	11,878	1910	7,516,730
Portugal	85,490	1900	5,498,182
Switzerland	15,976	1910	8,741,971
Greece	25,014	1907	2,681,958
Bulgaria	38,060	1910	4,284,844
Bosnia	50,790	1910	6,966,000
Serbia	18,650	1910	2,911,701
Montenegro	8,680	1909	250,000
Asia (with East Indies)	21,000,000	901,000,000	
Republic of China	4,277,170	1909	489,214,000
India	1,766,842	1911	815,182,587
Burma	224,788	1911	12,115,817
French Indo-China	309,980	1909	16,817,000
Siam	196,000	1909	6,686,486
Japan	147,855	1910	50,751,919
Korea	86,000	1911	18,125,027
Turkey in Asia	698,610	1909	17,688,500
Siberia	4,786,780	1911	8,220,100
Persia	628,000	1909	9,500,000

	Area in Square Miles	Population in 1900	Population in 1910
Arabia	170,880	1,050,000	
Afghanistan	250,000	5,900,000	
Baluchistan	181,855	1901	829,713
AFRICA	11,000,000	125,000,000	
Abyssinia	432,489	1910	5,000,000
Belgian Congo	900,680	1910	15,500,000
Egypt	400,000	1907	11,189,978
Algeria	343,500	1911	5,568,928
Morocco	219,000	1910	5,000,000
Tripoli	308,900	1906	1,000,000
Tunis	45,779	1910	1,928,317
Cape of Good Hope	276,995	1911	2,122,988
Transvaal	110,426	1911	1,676,611
AUSTRALIA, COMMONWEALTH OF	8,000,000	4,400,000	
New South Wales	810,372	1910	1,621,677
Victoria	57,884	1911	1,315,651
Queensland	670,590	1910	572,654
South Australia	380,070	1910	412,808
Tasmania	26,215	1910	156,860
Western Australia	975,920	1911	299,114
New Zealand	104,751	1910	1,048,847
AREA AND POPULATION OF THE UNITED STATES			
	Area in Square Miles	Population in 1900	Population in 1910
Alabama	51,998	1,828,697	2,188,008
Alaska	590,854	63,692	64,856
Arizona	113,956	122,981	204,854
Arkansas	53,885	1,811,564	1,574,449
California	156,297	1,485,038	2,877,549
Colorado	108,945	539,700	799,024
Connecticut	4,965	908,420	1,114,756
Delaware	2,870	184,735	202,822
District of Columbia	70	278,718	381,069
Florida	58,666	528,542	752,601
Georgia	59,265	2,916,381	2,800,191
Guam	210	8,561	11,978
Hawaiian Islands	6,449	154,001	191,909
Idaho	54,913	161,773	225,594
Illinois	56,665	4,821,360	5,688,591
Indiana	36,854	2,516,463	2,700,876
Iowa	56,147	2,921,588	2,924,771
Kansas	82,158	1,470,495	1,600,949
Kentucky	40,698	2,147,174	2,289,905
Louisiana	48,506	1,851,625	1,656,888
Maine	83,040	694,466	742,371
Maryland	12,827	1,188,044	1,295,846
Massachusetts	5,286	2,500,846	3,866,416
Michigan	57,980	2,420,983	2,510,178
Minnesota	64,693	1,751,894	2,075,708
Mississippi	46,585	1,551,270	1,797,114
Missouri	69,420	8,106,665	8,296,885
Montana	146,573	248,929	376,068
Nebraska	77,920	1,046,300	1,192,214
Nevada	110,690	42,385	81,875
New Hampshire	9,841	411,588	480,572
New Jersey	8,924	1,888,669	3,687,167
New Mexico	122,684	195,810	327,801
New York	49,204	7,268,894	9,118,614
North Carolina	56,426	1,588,510	2,906,987
North Dakota	70,597	819,146	567,056
Ohio	41,040	4,157,045	4,767,191
Oklahoma	70,057	790,391	1,057,165
Oregon	96,369	418,586	672,765
Panama Canal Zone	474	Population varies	

APPENDIX

	Area in square Miles	Population in 1900	Population in 1910	Population Census of 1900	Population Census of 1910
ansas	45,126	6,802,115	7,685,111	Chattanooga, Tenn.	90,154 44,604
ne Islands	127,533	7,860,551	8,276,502	Cheyenne, Wyo.	14,087 88,587
ico	3,435	902,019	1,118,012	Chicago, Ill.	1,698,575 2,186,298
island	1,248	428,556	542,610	Cincinnati, O.	825,902 864,468
i. Isds. (U. S. Territory)	77	8,800	6,780	Cleveland, O.	981,768 560,668
Carolina	80,989	1,840,816	1,515,400	Colorado Springs, Col.	21,065 29,073
Dakota	71,615	401,570	588,888	Columbia, S.C.	21,108 26,819
ssee	42,023	2,020,616	2,184,789	Columbus, O.	128,560 161,548
is.	265,896	8,045,710	8,886,542	Concord, N.H.	19,689 21,497
ia.	54	8,800	('00) 6,750	Cripple Creek, Col.	10,147 6,206
...	84,930	276,749	378,351	Dallas, Tex.	42,688 99,104
mont	9,664	848,641	935,946	Dayton, O.	58,388 16,577
inia	42,627	1,854,184	2,061,612	Denver, Col.	183,559 213,881
hington	69,127	518,108	1,141,990	Des Moines, Iowa.	62,189 56,863
st Virginia	24,170	958,800	1,221,119	Detroit, Mich.	285,704 465,766
econsin	56,066	9,009,042	9,833,860	Erie, Pa.	2,000 2,700
roming	97,914	92,081	145,965	Fargo, N.D.	1,000 1,700

TWENTY-SIX LARGEST CITIES OF THE UNITED STATES

	Population Census of 1900	Population Census of 1910	
1. New York, N. Y.	3,437,202	4,766,883	
2. Chicago, Ill.	1,698,575	2,185,253	
3. Philadelphia, Pa.	1,298,697	1,549,006	
4. St. Louis, Mo.	575,238	687,029	
5. Boston, Mass.	560,892	670,585	
6. Cleveland, O.	381,768	560,668	
7. Baltimore, Md.	508,957	558,455	
8. Pittsburgh, Pa.	321,616	583,905	
9. Detroit, Mich.	285,704	465,766	
10. Buffalo, N. Y.	352,887	428,715	
11. San Francisco, Cal.	342,782	416,912	
12. Milwaukee, Wis.	285,315	378,857	
13. Cincinnati, O.	323,902	364,463	
14. Newark, N. J.	246,070	347,469	
15. New Orleans, La.	287,104	389,075	
16. Washington, D. C.	278,718	381,069	
17. Los Angeles, Cal.	102,479	319,198	
18. Minneapolis, Minn.	202,718	301,408	
19. Jersey City, N. J.	206,438	267,779	
20. Kansas City, Mo.	163,752	248,351	
21. Seattle, Wash.	80,671	287,194	
22. Indianapolis, Ind.	169,164	233,650	
23. Providence, R. I.	175,597	224,926	
24. Louisville, Ky.	204,731	229,928	
25. Rochester, N. Y.	162,608	218,149	
26. St. Paul, Minn.	163,045	214,744	
			Fort Wayne, Ind. 45,115 68,983
			Fort Worth, Tex. 26,688 78,819
			Frankfort, Ky. 9,487 10,445
			Galveston, Tex. 37,780 30,951
			Gloucester, Mass. 26,121 24,895
			Grand Rapids, Mich. 57,565 112,571
			Guthrie, Ok. 10,006 11,654
			Harrisburg, Pa. 50,167 64,186
			Hartford, Conn. 70,850 98,915
			Helena, Mont. 10,770 12,515
			Honolulu, Hawaiian Isds. 39,905 52,188
			Houston, Tex. 44,688 78,800
			Indianapolis, Ind. 169,164 238,650
			Jackson, Miss. 7,516 21,282
			Jacksonville, Fla. 29,429 57,699
			Jefferson City, Mo. 9,664 11,850
			Jersey City, N. J. 206,438 267,779
			Juniper, Alaska. 1,584 1,644
			Kansas City, Mo. 168,752 248,851
			Key West, Fla. 17,114 19,945
			Knoxville, Tenn. 32,637 36,344
			Lansing, Mich. 16,485 31,22
			Lawrence, Mass. 62,559 85,86
			Leadville, Col. 12,455 7,7
			Lincoln, Neb. 40,169 48,9
			Little Rock, Ark. 38,307 45,9

CITIES OF THE UNITED STATES AND ITS DEPENDENCIES MENTIONED IN THIS BOOK

	Population Census of 1900	Population Census of 1910		
Akron, O.	42,728	69,067	Madison, Wis.	19,164
Albany, N. Y.	94,151	100,235	Manchester, N. H.	56,987
Annapolis, Md.	8,525	8,603	Manila, Philippines	32
Astoria, Ore.	8,881	9,509	Memphis, Tenn.	102,820
Atlanta, Ga.	89,572	154,589	Miami, Fla.	1,651
Augusta, Me.	11,688	13,911	Milwaukee, Wis.	235,815
Austin, Tex.	22,258	29,560	Minneapolis, Minn.	202,718
Baltimore, Md.	508,957	508,483	Mobile, Ala.	35,469
Bangor, Me.	21,850	24,808	Montgomery, Ala.	30,846
Baton Rouge, La.	11,269	14,597	Montpelier, Vt.	6,266
Berkeley, Cal.	18,314	40,484	Nashville, Tenn.	80,865
Birmingham, Ala.	34,415	132,685	Newark, N. J.	246,070
Bismarck, N. D.	3,819	5,448	New Bedford, Mass.	62,442
Boise, Idaho	5,957	17,358	New Haven, Conn.	105,027
Boston, Mass.	560,993	670,986	New Orleans, La.	257,104
Bridgeport, Conn.	70,996	102,054	New York, N. Y.	3,437,202
Brockton, Mass.	40,068	56,878	None, Alaska	12,486
Brooklyn, N. Y.	1,166,659	1,684,351	Norfolk, Va.	46,624
Buffalo, N. Y.	359,887	428,715	Oakland, Cal.	66,960
Butte, Mont.	80,470	89,165	Ogden, Utah	16,318
Cambridge, Mass.	91,886	104,889	Oklahoma City, Ok.	10,067
Camden, N. J.	75,985	94,598	Olympia, Wash.	4,089
Carson City, Nev.	2,100	2,464	Omaha, Neb.	102,555
Charleston, S. C.	55,807	58,893	Pasadena, Cal.	9,117
Charleston, W. Va.	11,099	34,014	Paterson, N. J.	105,171
			Pensacola, Fla.	17,747

	Population Census of 1900	Population Census of 1910	Population
Pecoria, Ill.	56,100	66,950	1,481,200
Philadelphia, Pa.	1,398,997	1,549,008	1,896,994
Phoenix, Ariz.	5,544	11,134	1,916,514
Pierre, S.D.	2,806	8,666	1,125,000
Pittsburgh, Pa.	931,616	588,905	1,117,161
Ponce, Porto Rico	27,959	35,027	1,000,000
Portland, Me.	50,145	59,571	1,000,000
Portland, Ore.	90,426	207,214	972,893
Providence, R.I.	175,597	224,826	986,000
Pueblo, Col.	28,157	44,395	21. Budapest, Austria-Hungary
Raleigh, N.C.	18,648	19,218	1910.....880,871
Reading, Pa.	78,961	96,071	22. Glasgow, Scotland.....1911.....734,455
Richmond, Va.	55,050	127,693	23. Warsaw, Russia.....1909.....781,179
Kirchester, N.Y.	102,606	218,149	24. Liverpool, England.....1910.....767,606
Kutland, Vt.	11,499	18,546	25. Barcelona, Spain.....1911.....700,000
Sacramento, Cal.	29,289	44,696	
Saginaw, Mich.	42,845	50,510	
St. Augustine, Fla.	4,272	5,494	
St. Joseph, Mo.	102,979	77,408	
St. Louis, Mo.	575,288	687,029	
St. Paul, Minn.	163,065	214,744	
Salem, Mass.	85,956	48,697	
Salem, Ore.	4,268	14,094	
Salt Lake City, Utah	58,581	92,777	
San Antonio, Tex.	58,821	96,614	
San Diego, Cal.	17,700	89,578	
San Francisco, Cal.	342,782	416,912	
San José, Cal.	21,500	29,946	
San Juan, Porto Rico	32,048 ('99)	48,716	
Santa Fé, N. Mex.	5,608	5,072	
Savannah, Ga.	54,244	65,064	
Scranton, Pa.	102,026	129,867	
Seattle, Wash.	90,671	287,194	
Sitka, Alaska.	1,396	1,036	
Somerville, Mass.	61,648	77,286	
Spokane, Wash.	86,848	104,402	
Springfield, Ill.	94,159	51,674	
Springfield, Mass.	62,059	88,926	
Stockton, Cal.	17,506	28,253	
Superior, Wis.	81,091	40,384	
Syracuse, N.Y.	108,874	137,249	
Tacoma, Wash.	87,714	68,748	
Tallahassee, Fla.	2,981	5,018	
Tampa, Fla.	15,889	87,792	
Terre Haute, Ind.	36,678	58,107	
Toledo, O.	181,922	168,497	
Topeka, Kan.	88,668	48,684	
Trenton, N.J.	78,707	96,815	
Troy, N.Y.	76,067	76,818	
Vicksburg, Miss.	14,884	20,814	
Washington, D.C.	278,718	381,069	
Wheeling, W. Va.	88,678	41,641	
Wilkes-Barre, Pa.	51,721	67,105	
Wilmington, Del.	76,509	87,611	
Wilmington, N.C.	20,976	25,748	
Worcester, Mass.	118,421	145,996	
Youngstown, O.	44,985	79,066	

TWENTY-FIVE LARGEST CITIES IN THE WORLD

	Population
1. London, England	1910.....4,872,702
Greater London	1910.....7,687,196
2. New York, U.S.	1910.....4,764,889
3. Paris, France	1911.....2,846,986
4. Tokyo, Japan	1905.....2,186,079
5. Chicago, U.S.	1910.....2,185,288
6. Berlin, Germany	1910.....2,070,695
7. Vienna, Austria-Hungary	1911.....2,004,991
8. St. Petersburg, Russia	1910.....1,907,708
9. Canton, China *	1911.....1,600,000
10. Philadelphia, U.S.	1910.....1,549,008

	Population
11. Moscow, Russia	1909.....1,481,200
12. Buenos Aires, Argentina	1911.....1,896,994
13. Calcutta, India	1910.....1,916,514
14. Constantinople, Turkey	1910.....1,125,000
15. Osaka, Japan	1908.....1,117,161
16. Shanghai, China *	1910.....1,000,000
17. Tientsin, China *	1910.....1,000,000
18. Rio de Janeiro, Brazil	1909.....1,000,000
19. Bombay, India	1910.....972,893
20. Hamburg, Germany	1910.....986,000
21. Budapest, Austria-Hungary	1910.....880,871
22. Glasgow, Scotland	1911.....734,455
23. Warsaw, Russia	1909.....781,179
24. Liverpool, England	1910.....767,606
25. Barcelona, Spain	1911.....700,000

IMPORTANT FOREIGN CITIES

	Population
Adelaide, Australia	1910.....192,000
Alexandria, Egypt	1907.....889,246
Algiers, Algeria	1906.....138,940
Amsterdam, Netherlands	1910.....578,968
Antwerp, Belgium	1910.....820,640
Arequipa, Peru	1908.....85,000
Asuncion, Paraguay	1910.....40,000
Athens, Greece	1907.....84,000
Bahia, Brazil	1909.....230,000
Bangkok, Siam	1909.....628,675
Barcelona, Spain	1911.....700,000
Basel, Switzerland	1910.....181,914
Batavia, Java	1905.....188,551
Belfast, Ireland	1910.....891,167
Belgrade, Serbia	1910.....84,285
Berlin, Germany	1910.....9,070,695
Berne, Switzerland	1910.....85,264
Birmingham, England	1910.....570,118
Bogota, Colombia	1909.....150,800
Bombay, India	1910.....972,893
Bordeaux, France	1911.....261,678
Bremen, Germany	1910.....246,872
Brisbane, Australia	1909.....148,077
Brussels, Belgium	1910.....665,806
Bucharest, Roumania	1905.....800,000
Budapest, Austria-Hungary	1910.....880,871
Canton, China	1911.....1,600,000
Cape Town, Cape Colony	1911.....67,000
Caracas, Venezuela	1911.....72,429
Cayenne, French Guiana	1910.....12,426
Cettinje, Montenegro	1906.....4,500
Dublin, Ireland	1910.....402,928
Edinburgh, Scotland	1911.....380,815
Fez, Morocco	1910.....140,000
Florence, Italy	1911.....289,860
Frankfort, Germany	1910.....414,598
Georgetown, British Guiana	1911.....58,000
Geneva, Switzerland	1910.....125,590
Genoa, Italy	1911.....272,077
Glasgow, Scotland	1911.....784,455
Hague, The Netherlands	1910.....280,515
Halifax, Nova Scotia	1911.....46,000
Hamburg, Germany	1910.....986,000
Havana, Cuba	1910.....802,526
Havre, France	1911.....136,159
Hobart, Tasmania	1911.....27,719

* The populations of Chinese cities are very uncertain. The latest estimates give them a far smaller population than was formerly given.

APPENDIX

	Population		Population		
Hongkong, China.....	1911.....	866,145	Vera Cruz, Mexico.....	1910.....	29,164
Irkutsk, Siberia.....	1908.....	108,000	Victoria, Canada.....	1911.....	89,000
Jerusalem, Turkey in Asia.....	1910.....	70,000	Vienna, Austria-Hungary.....	1911.....	2,004,291
Johannesburg, Transvaal.....	1910.....	155,580	Warsaw, Russia.....	1909.....	781,179
Kabul, Afghanistan.....	1906.....	60,000	Wellington, New Zealand.....	1911.....	70,729
Kimberley, Cape Colony.....	1911.....	18,656	Winnipeg, Canada.....	1911.....	185,000
La Paz, Bolivia.....	1909.....	78,556	Yokohama, Japan.....	1908.....	894,503
Leipzig, Germany.....	1910.....	587,685	Zurich, Switzerland.....	1910.....	188,068
Lima, Peru.....	1908.....	140,884			
Lisbon, Portugal.....	1900.....	856,009			
Liverpool, England.....	1910.....	767,606			
London, England.....	1910.....	4,872,702			
London, Greater.....	1910.....	7,587,196			
Lyon, France.....	1911.....	528,796			
Madras, India.....	1910.....	618,060			
Madrid, Spain.....	1910.....	571,589			
Malaga, Spain.....	1910.....	188,045			
Manchester, England.....	1910.....	716,354			
Mandalay, Burma.....	1910.....	198,299			
Marseille, France.....	1911.....	550,619			
Mecca, Turkey in Asia.....		80,000			
Melbourne, Victoria.....	1910.....	591,830			
Mexico City, Mexico.....	1910.....	470,659			
Milan, Italy.....	1911.....	589,200			
Mocha, Turkey in Asia.....	1900.....	5,000			
Montevideo, Uruguay.....	1909.....	291,465			
Montreal, Canada.....	1910.....	460,000			
Moscow, Russia.....	1909.....	1,481,200			
Munich, Germany.....	1910.....	585,058			
Naples, Italy.....	1911.....	723,208			
Odessa, Russia.....	1909.....	478,900			
Ottawa, Canada.....	1911.....	86,000			
Para, Brazil.....		65,000			
Paramaribo, Dutch Guiana.....	1910.....	85,062			
Paris, France.....	1911.....	2,846,986			
Peking, China.....		1,600,000			
Pernambuco, Brazil.....	1906.....	150,000			
Perth, Western Australia.....	1908.....	54,354			
Prague, Austria-Hungary.....	1910.....	228,741			
Quebec, Canada.....	1910.....	78,000			
Quito, Ecuador.....	1909.....	70,000			
Riga, Russia.....	1908.....	818,400			
Rio de Janeiro, Brazil.....	1909.....	1,000,000			
Rome, Italy.....	1911.....	588,684			
Rotterdam, The Netherlands.....	1910.....	426,888			
St. John, Canada.....	1911.....	42,000			
St. John's, Newfoundland.....	1901.....	31,501			
St. Petersburg, Russia.....	1910.....	1,907,708			
Santiago, Chile.....	1907.....	382,724			
Sao Paulo, Brazil.....	1909.....	400,000			
Seoul, Korea.....	1911.....	278,968			
Shanghai, China.....		1,000,000			
Singapore, Straits Settlements.....	1911.....	811,985			
Smyrna, Turkey in Asia.....	1910.....	850,000			
Sofia, Bulgaria.....	1910.....	102,769			
Stockholm, Sweden.....	1910.....	841,986			
Sucre, Bolivia.....	1909.....	28,416			
Sydney, Australia.....	1910.....	621,100			
Tehran, Persia.....	1905.....	290,000			
Tientsin, China.....	1910.....	1,000,000			
Timbuktu, Sudan.....		20,000			
Tokyo, Japan.....	1908.....	2,186,079			
Toronto, Canada.....	1911.....	376,000			
Trieste, Austria-Hungary.....	1910.....	229,475			
Tripoli, Tripoli.....	1909.....	80,000			
Tunis, Tunisia.....	1906.....	297,519			
Turin, Italy.....	1911.....	427,788			
Valparaiso, Chile.....	1907.....	162,447			
Vancouver, Canada.....	1911.....	100,000			
Venice, Italy.....	1911.....	160,727			

HEIGHT OF A FEW MOUNTAIN PEAKS			
		Feet	
Mount Everest, Himalaya Mountains, Asia.....		29,002	
Kanchanjangha.....		28,156	
Aconcagua, Andes Mountains.....		22,860	
Mt. McKinley, Alaskan Mountains, Alaska.....		20,464	
Mt. Logan, Coast Ranges, Canada.....		19,589	
Orizaba, Sierra Madre, Mexico.....		18,814	
Mt. Elbruz, Caucasus Mountains, Russia.....		18,200	
Mt. St. Elias, Coast Ranges, Alaska.....		18,025	
Mont Blanc, Alps Mountains, France.....		15,781	
Mt. Whitney, Sierra Nevada Mountains, California.....		14,602	
Mt. Rainier, Cascade Mountains, Washington.....		14,263	
Mt. Shasta, Cascade Mountains, California.....		14,580	
Pikes Peak, Rocky Mountains, Colorado.....		14,111	
Mauna Loa, Hawaiian Islands.....		13,675	
Fremont Peak, Rocky Mountains, Wyoming.....		13,790	
Fujiyama, Japan.....		12,865	
Mt. Mitchell, Appalachian Mountains, North Carolina.....		6,711	
Mt. Washington, White Mountains, New Hampshire.....		6,279	
Mt. Marcy, Adirondack Mountains, New York.....		5,344	

SOME OF THE LARGEST RIVERS OF THE WORLD					
Name	Country	Length in Miles	Basin Area Square Miles	Ocean	
Missouri-Mississippi	United States	4,300	1,257,000	Atlantic	
Nile	Africa	3,400	1,273,000	Atlantic	
Amazon	South America	3,800	2,500,000	Atlantic	
Ob	Siberia	3,900	1,000,000	Arctic	
Yangtse-Kiang	China	3,900	548,000	Pacific	
Congo	Africa	2,900	1,200,000	Atlantic	
Lena	Siberia	2,800	950,000	Arctic	
Hoang-Ho	China	2,700	870,000	Pacific	
Niger	Africa	2,600	568,300	Atlantic	
Plata	South America	2,580	1,200,000	Atlantic	
Mackenzie	Canada	2,000	590,000	Arctic	
Volga	Russia	2,400	568,300	Caspian	
St. Lawrence	North America	2,200	550,000	Atlantic	
Yukon	Alaska	2,000	440,000	Pacific	
Indus	India	1,800	372,700	Indian	
Danube	Europe	1,770	300,000	Atlantic	

TEN OF THE GREAT LAKES OF THE WORLD			
Name	Length in Miles	Breadth in Miles	Area in Square Miles
Caspian	650	270	169,000
Superior	390	160	80,529
Victoria Nyanza	280	220	30,000
Aral	225	185	26,900
Huron	230	100	22,822
Michigan	355	85	21,729
Tanganjika	420	50	12,650
Baikal	397	45	12,500
Erie	230	58	9,930
Chad (a shallow lake which grows very large in the rainy season and shrinks in the dry season)			about 10,000
			Africa

APPROXIMATE AVERAGE HEIGHT OF SOME PLATEAUS			
		Feet	
Tibet		10-15,000	
Bolivia		10-12,000	
Spain		8-10,000	
Mexico		5-6,000	
Western United States Plateau		5-6,000	
Brazil		2-3,500	

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

(WEBSTER'S INTERNATIONAL DICTIONARY)

A, as in ale; **ā**, as in sentīte; **ă**, as in cāre; **ă**, as in ām; **ă**, as in ārm; **ă**, as in āsk; **a**, as in fi'nal; **ă**, as in all; **ĕ**, as in ēve; **ē**, as in ē-vent'; **ĕ**, as in ēnd; **ĕ**, as in fērn; **e**, as in re'cent; **I**, as in ice; **i**, as in i-de'a; **I**, as in īll; **ō**, as in old; **ō**, as in ô-be'y'; **ō**, as in ôrb; **ō**, as in ôdd; **ū**, as in ūse; **ū**, as in ū-nite'; **ü**, as in ūde; **ü**, as in full; **ū**, as in ūp; **ū**, as in ūrn; **ÿ**, as in pit'ÿ; **oo**, as in food; **oo**, as in fōot; **ou**, as in out; **oi**, as in oil; **n**, representing simply the nasal tone of the preceding vowel, as in ensemble (*ān'sān'b'l*); **'** (for voice glide) as in pardon (*pär'd'n*); **g** (hard), as in go; **s** (sharp), as in so; **z** (like a sonant), as in zone; **ch** (= tsh) as in chair; **sh**, for ch, as in machine; **zh** (= sh made sonant), for z, as in azure; **j** (= dzh), for g, as in gem; **k**, for ch, as in chorus; **kw**, for qu, as in queen; **ks** (surd), for x, as in vex; **gz** (sonant), for x, as in exist; **f**, for ph, as in philosophy; **hw**, for wh, as in what; **t**, for ed, as in baked; **ng**, as in long; **n** (like ng) for n before the sound of k or hard g, as in bank; **n** (ordinary sound), as in no; **th** (sonant), for th, as in then; **th** (surd), as in thin.

The primary accent is indicated by a short, heavy mark ('), the secondary by a lighter mark ('').

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the Valleys," and "Animals of the Valleys," etc. (A.B.C., \$0.25); Kingsley, "Madam How and Lady Why," Chapter I, "The Glen" (McM., \$0.50); Frye, "Brooks and Brook Basins" (Ginn, \$0.50); Avebury, "The Beauties of Nature," Chapters VII and VIII (McM., \$1.50); Parker and Helm, "Uncle Robert's Geography," Vol. III, Chapters XII and XIV (\$0.50); Poems: "The Brook," Tennyson; "The Mad River," Longfellow; "The Falls of Lodore," Southey; "The Brook and the Wave," Longfellow; "A Water Song," E. G. W. Rowe; "The Endless Story," A. K. Eggleston; "The Impatient River," E. G. W. Rowe; the last three in Payne's "Geographical Nature Studies" (A.B.C., \$0.25).

PONDS AND LAKES.—Shaler, "First Book in Geology," pp. 125-129 (Heath, \$0.60); Tarr, "Elementary Geology," pp. 188-193 (McM., \$1.40); Tarr, "New Physical Geography," Chapter IX, (McM., \$1.00); Avebury, "The Beauties of Nature," Chapter VIII (McM., \$1.50); Payne, "Geographical Nature Studies," section on "Pools, Ponds, and Lakes" (A.B.C., \$0.25); "The Lakeside," poem, by Whittier.

THE OCEAN.—Shaler, "Sea and Land" (Scribner, New York, \$2.50); Tarr, "New Physical Geography," Chapters X, XI (McM., \$1.00); Avebury, "The Beauties of Nature," Chapter IX (McM., \$1.50); Andrews, "Stories Mother Nature Told Her Children," section on "Sea Life" (Ginn, \$0.50); Holland, "The Sea Voyage," in "Arthur Bonnieston"; Dickens, "David Copperfield," Chapter V; "Robinson Crusoe," Chapter III; Taylor, "The Waves," "Wind and Sea," in Marble's "Nature Pictures by American Poets" (McM., \$1.25); Coleridge, "The Ancient Mariner."

THE AIR.—Tarr, "New Physical Geography," Chapters XII-XIV (McM., \$1.00); "A Summer Shower," "Cornell Nature Study Bulletin," No. 1, June, 1899 (free on application to College of Agriculture, Cornell University, Ithaca, N.Y.); Murché, "Science Reader," Book III, sections on "Air," "Vapor in the Air," "Vapor; What Becomes of It?" "What the Atmosphere Is," "Ice, Hail, and Snow" (McM., \$0.40); Frye, "Brooks and Brook Basins" sections on "Forins of Water" and "The Atmosphere in Motion" (Ginn, \$0.50); Strong, "All the Year Round," Part II, sections 33-39 (Ginn, \$0.30); Andrews, "Stories Mother Nature told Her Children," section on "The Frost Giants" (Ginn, \$0.50); Payne, "Geographical Nature Studies," many excellent stories and poems (A.B.C., \$0.25); Marble, "Nature Pictures by American Poets"; "Summer Shower," Dickinson; "Rain," De Land; "Song of the Snowflakes," Cheney; "Cloudland" (McM., \$1.25); Wilson, "Nature Study in Elementary Schools," Second Reader, the following poems: "The Rain Shower," "The Wind Song," "The Bag of Winds," "The Sunbeams," "Snowflakes," "Signs of Rain," "The Rainbow" (McM., \$0.35); Lovejoy, "Nature in Verse," the following poems: "Merry Rain," "The Clouds," "The Dew," "The Fog," "The Rain," "The Snow," "The Frost," "Jack Frost," "Little Snowflakes" (S.B.C., \$0.60); Shelley, "The Cloud"; Whittier, "The Frost Spirit"; Bryant, "The Hur-

ricane"; Whittier, "Snow-bound"; Irving, "The Thunderstorm" (prose).

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"The Holy Land," "Palestine," "The Pipes of Lucknow."

AFRICA.—Lyde, "A Geography of Africa" (McM., \$0.50); Ballou, "Footprints of Travel" Chapters IX and X (Ginn, \$0.80); Badlam, "Views in Africa" (S.B.C., \$0.65); Andrews, "Seven Little Sisters," section on "The Little Dark Girl" and "Gemila" (Ginn, \$0.50); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Youth's Companion Series, "The Wide World," sections on "Some Little Egyptians," "A School in Cairo" (Ginn, \$0.25); Carpenter, "Geographical Readers" (Ginn, \$0.25).

on "Africa" (A.B.C., \$0.35); Chase and Clow, "Stories of Industry," Vols. I and II (E.P.C., \$0.40).

AUSTRALIA, etc.—Ballou, "Footprints of Travel," Chapters II, IV, V, VI, VII (Ginn, \$0.60); Kellogg, "Australia and the Islands of the Sea" (S.B.C., \$0.68); Pratt, "Stories of Australasia" (E.P.C., \$0.40); Rocheleau, "Geography of Commerce and Industry" (E.P.C., \$1.00); Redway, "Commercial Geography" (Scribner, \$1.25); Starr, "Strange Peoples" (Heath, \$0.40); Chase and Clow, "Stories of Industry," Vols. I and II (E.P.C., \$0.40); Poem, "Western Australia," O'Reilly.

APPENDIX II

TABLES OF STATISTICS

NOTE. — The figures 1900, 1910, etc., refer to the year in which the Census was taken or the estimate was made. Most of the figures are obtained from the U. S. Census Reports, the "Statesman's Year Book," or from Gannett's "Statistical Abstract of the World."

SIZE OF THE EARTH

LENGTH OF THE EARTH'S DIAMETER at equator (miles)	7,936
LENGTH OF THE EQUATOR (miles)	24,902
THE EARTH'S SURFACE (square miles).....	194,940,000
Pacific Ocean (square miles).....	55,660,000
Atlantic Ocean (square miles).....	38,720,000
Antarctic Ocean and the great southern sea surrounding the south pole (square miles).....	30,605,000
Indian Ocean (square miles).....	16,720,000
Arctic Ocean (square miles).....	4,71,000
The Sea (square miles).....	141,496,000

CONTINENTS AND PRINCIPAL COUNTRIES

	Area in Square Miles	Population
NORTH AMERICA	8,500,000	125,000,000
United States	3,026,759	1910... 91,972,266
United States (with Alaska, etc.)	3,624,122	1910... 98,402,151
Mexico	767,005	1910... 15,063,207
Canada	3,663,910	1911... 7,192,333
Newfoundland	42,784	1910... 297,581
Central America	200,505	5,077,169
Cuba	41,000	1910... 2,150,112
Panama	31,500	1909... 419,029

SOUTH AMERICA.....	7,400,000	49,000,000
Brazil	3,215,991	1909... 21,461,180
Argentina	1,185,540	1911... 7,171,910
Peru	605,788	1908... 4,500,000
Chile	292,550	1910... 3,329,030
Colombia	453,100	1910... 4,320,000
Bolivia	605,400	1910... 2,267,935
Venezuela	398,976	1911... 2,713,768
Ecuador	116,000	1910... 1,500,000
Paraguay	171,204	1910... 752,000
Uruguay	72,210	1910... 1,112,000

EUROPE	8,000,000	489,000,000
Russia	1,802,524	1910... 135,859,400
German Empire	209,780	1910... 64,908,428
Austria-Hungary	261,100	1910... 51,328,921
France	207,054	1911... 39,601,509
British Isles	121,380	1910... 45,469,564
Italy	110,650	1910... 84,269,746
Spain	194,788	1910... 19,503,065
Turkey in Europe	65,350	1909... 6,130,200
Norway	124,130	1910... 2,382,698
Sweden	172,876	1910... 5,521,943
Denmark	15,582	1911... 2,775,076
The Netherlands	12,648	1910... 5,948,155
Belgium	11,373	1910... 7,516,730
Portugal	85,490	1900... 5,422,182
Switzerland	15,976	1910... 8,741,971
Greece	35,014	1907... 2,681,952
Bulgaria	88,080	1910... 4,284,844
Romania	50,720	1910... 6,986,000
Serbia	18,650	1910... 2,911,701
Montenegro	8,680	1909... 250,000

ASIA (with East Indies)	21,000,000	901,000,000
Republic of China	4,277,170	1909... 459,214,000
India	1,766,642	1911... 815,192,587
Burma	236,788	1911... 12,115,217
French Indo-China	809,980	1909... 16,817,000
Siam	195,000	1909... 6,686,486
Japan	147,655	1910... 50,751,919
Korea	86,000	1911... 18,125,027
Turkey in Asia	698,610	1909... 17,688,500
Siberia	4,796,790	1911... 5,220,100
Persia	628,000	1909... 9,500,000

	Area in Square Miles	Population
Arabia	170,880	1,050,000
Afghanistan	250,000	5,900,000
Baluchistan	131,555	1901... 829,713
AFRICA	11,000,000	125,000,000
Abyssinia	432,452	1910... 5,000,000
Belgian Congo	900,650	1910... 15,500,000
Egypt	400,000	1901... 11,189,978
Algeria	348,500	1911... 5,568,928
Morocco	219,000	1910... 5,000,000
Tripoli	398,900	1906... 1,000,000
Tunis	45,779	1910... 1,928,217
Cape of Good Hope	276,995	1911... 2,122,982
Transvaal	110,426	1911... 1,676,611
AUSTRALIA, COMMONWEALTH OF	2,000,000	4,400,000
New South Wales	310,372	1910... 1,621,677
Victoria	57,884	1911... 1,815,551
Queensland	670,500	1910... 572,654
South Australia	380,070	1910... 412,808
Tasmania	26,215	1910... 156,890
Western Australia	975,920	1911... 289,114
New Zealand	104,751	1910... 1,048,847

AREA AND POPULATION OF THE UNITED STATES

	Area in Square Miles	Population in 1900	Population in 1910
Alabama	51,998	1,828,697	2,138,098
Alaska	590,884	63,592	64,856
Arizona	113,056	122,981	204,354
Arkansas	53,335	1,311,564	1,574,449
California	158,297	1,455,058	2,877,549
Colorado	108,848	730,700	799,024
Connecticut	4,905	98,420	1,114,756
Delaware	2,370	154,735	202,822
District of Columbia	70	274,718	381,009
Florida	58,666	528,542	752,691
Georgia	59,265	2,216,881	2,600,121
Guam	210	8,561	11,973
Hawaiian Islands	6,449	154,001	191,909
Idaho	44,318	161,772	325,594
Illinois	56,665	4,821,530	5,638,591
Indiana	36,354	2,516,469	2,700,876
Iowa	56,147	2,231,588	2,224,771
Kansas	82,158	1,470,493	1,690,949
Kentucky	40,598	2,147,174	2,289,905
Louisiana	48,506	1,851,025	1,606,388
Maine	83,040	694,466	742,371
Maryland	12,397	1,158,044	1,295,846
Massachusetts	8,266	2,505,846	2,866,416
Michigan	51,980	2,420,983	2,610,178
Minnesota	84,682	1,751,894	2,076,706
Mississippi	46,965	1,551,270	1,797,114
Missouri	69,420	8,100,665	8,288,385
Montana	146,572	248,829	376,038
Nebraska	77,320	1,066,800	1,192,214
Nevada	110,690	42,835	81,875
New Hampshire	9,841	411,588	480,572
New Jersey	8,224	1,853,669	2,687,167
New Mexico	122,634	195,810	327,301
New York	49,204	7,268,894	9,118,614
North Carolina	52,426	1,583,810	2,206,287
North Dakota	76,987	819,146	557,056
Ohio	41,040	4,157,545	4,767,121
Oklahoma	70,067	790,891	1,667,166
Oregon	96,359	418,596	672,765
Panama Canal Zone	474		Population varies

APPENDIX

	Area in Square Miles	Population in 1900	Population in 1910	Population Census of 1900	Population Census of 1910
sylvania	45,126	6,902,115	7,665,111	80,154	44,604
pine Islands	127,553	7,860,551	8,276,502	14,067	88,587
Rico	3,485	902,019	1,118,013	1,698,575	2,182,988
s Island	1,243	423,556	542,610	325,592	864,483
an Isds. (U. S. Territory)	77	8,800	6,780	381,768	560,668
b Carolina	30,989	1,840,816	1,515,400		
h Dakota	77,615	401,070	588,888		
nessee	42,023	2,020,616	2,184,789		
as.	205,896	8,043,710	3,896,542		
ula	54	8,800	(09) 6,780		
th	84,990	276,749	373,351		
rmon	9,504	848,641	350,946		
rginia	42,627	1,854,184	2,061,612		
ashington	60,127	518,108	1,141,990		
est Virginia	34,170	958,800	1,221,119		
isconsin	56,066	2,069,042	2,883,860		
yoming	97,914	92,581	145,965		
TWENTY-SIX LARGEST CITIES OF THE UNITED STATES					
		Population Census of 1900	Population Census of 1910		
1. New York, N. Y.	3,497,292	4,766,883			
2. Chicago, Ill.	1,698,575	2,182,988			
3. Philadelphia, Pa.	1,298,697	1,549,008			
4. St. Louis, Mo.	515,238	687,029			
5. Boston, Mass.	560,892	670,885			
6. Cleveland, O.	381,768	560,668			
7. Baltimore, Md.	508,957	558,455			
8. Pittsburgh, Pa.	321,616	583,995			
9. Detroit, Mich.	285,704	465,166			
10. Buffalo, N. Y.	352,987	428,115			
11. San Francisco, Cal.	842,782	416,912			
12. Milwaukee, Wis.	285,315	378,857			
13. Cincinnati, O.	825,902	864,468			
14. Newark, N. J.	246,070	847,469			
15. New Orleans, La.	287,104	889,075			
16. Washington, D. C.	278,718	381,069			
17. Los Angeles, Cal.	102,479	819,193			
18. Minneapolis, Minn.	202,713	801,408			
19. Jersey City, N. J.	206,438	267,779			
20. Kansas City, Mo.	168,152	243,381			
21. Seattle, Wash.	80,671	287,184			
22. Indianapolis, Ind.	169,164	238,650			
23. Providence, R. I.	175,597	224,326			
24. Louisville, Ky.	204,781	223,928			
25. Rochester, N. Y.	162,608	218,149			
26. St. Paul, Minn.	163,065	214,744			
CITIES OF THE UNITED STATES AND ITS DEPENDENCIES MENTIONED IN THIS BOOK					
		Population Census of 1900	Population Census of 1910		
Akron, O.	42,728	69,067			
Albany, N. Y.	94,151	100,238			
Annapolis, Md.	8,525	8,000			
Astoria, Ore.	8,881	9,599			
Atlanta, Ga.	80,872	154,589			
Augusta, Me.	11,688	18,211			
Austin, Tex.	92,258	29,560			
Baltimore, Md.	508,957	558,455			
Bangor, Me.	21,850	24,808			
Baton Rouge, La.	11,209	14,897			
Berkeley, Cal.	13,214	40,424			
Birmingham, Ala.	95,415	182,685			
Bismarck, N. D.	3,319	5,448			
Bolé, Idaho	5,967	17,358			
Boston, Mass.	560,892	670,595			
Bridgeport, Conn.	70,996	102,054			
Brockton, Mass.	40,068	56,878			
Brooklyn, N. Y.	1,166,589	1,684,351			
Buffalo, N. Y.	852,987	428,715			
Butte, Mont.	30,470	89,185			
Cambridge, Mass.	91,896	104,899			
Camden, N. J.	75,985	94,558			
Carson City, Nev.	2,100	3,466			
Charleston, S. C.	55,807	58,888			
Charleston, W. Va.	11,009	34,014			
Chattanooga, Tenn.			30,154	44,604	
Cheyenne, Wyo.			14,067	38,587	
Chicago, Ill.			1,698,575	2,182,988	
Cincinnati, O.			325,592	864,483	
Cleveland, O.			381,768	560,668	
Colorado Springs, Col.			21,065	29,078	
Columbus, S. C.			21,108	26,819	
Columbus, O.			125,660	161,548	
Concord, N. H.			19,689	21,497	
Cripple Creek, Colo.			10,147	6,306	
Dallas, Tex.			42,688	92,104	
Dayton, O.			53,388	116,677	
Denver, Colo.			183,559	218,881	
Des Moines, Iowa			62,189	86,863	
Detroit, Mich.			285,704	465,766	
Dover, Del.			8,929	8,720	
Duluth, Minn.			52,969	78,466	
Evansville, Ind.			59,007	60,647	
Fall River, Mass.			104,563	119,295	
Fort Wayne, Ind.			45,115	68,983	
Fort Worth, Tex.			26,688	78,812	
Frankfort, Ky.			9,487	10,465	
Galveston, Tex.			87,789	36,951	
Gloucester, Mass.			26,191	24,398	
Grand Rapids, Mich.			87,665	112,571	
Guthrie, Ok.			10,006	11,654	
Harrisburg, Pa.			50,167	64,156	
Hartford, Conn.			79,850	98,915	
Helena, Mont.			10,170	12,515	
Honolulu, Hawaiian Isds.			39,806	62,188	
Houston, Tex.			44,688	78,800	
Indianapolis, Ind.			169,164	228,650	
Jackson, Miss.			7,516	21,262	
Jacksonville, Fla.			28,429	57,009	
Jefferson City, Mo.			9,664	11,850	
Jersey City, N. J.			206,488	267,779	
Juneau, Alaska			1,864	1,644	
Kansas City, Mo.			163,752	248,881	
Key West, Fla.			17,114	19,945	
Knoxville, Tenn.			82,687	86,846	
Lansing, Mich.			16,485	31,229	
Lawrence, Mass.			62,559	85,892	
Leadville, Colo.			12,455	7,506	
Lincoln, Neb.			40,169	48,973	
Little Rock, Ark.			38,807	45,941	
Los Angeles, Cal.			102,479	319,196	
Louisville, Ky.			204,781	228,928	
Lowell, Mass.			94,969	106,294	
Lynn, Mass.			68,518	80,389	
Madison, Wis.			19,164	25,533	
Manchester, N. H.			56,987	70,04	
Manila, Philippines				264,4	
Memphis, Tenn.			102,920	181,1	
Miami, Fla.			1,681	5,4	
Milwaukee, Wis.			235,815	378,8	
Minneapolis, Minn.			302,718	301,	
Mobile, Ala.			38,469	51,	
Montgomery, Ala.			30,346	38	
Montpelier, Vt.			6,266	7	
Nashville, Tenn.			50,885	110	
Newark, N. J.			246,070	24	
New Bedford, Mass.			62,442	9	
New Haven, Conn.			108,027	17	
New Orleans, La.			237,104	38	
New York, N. Y.			8,487,202	4,7	
Nome, Alaska			12,486		
Norfolk, Va.			46,624		
Oakland, Cal.			66,960		
Orgden, Utah			16,818		
Oklahoma City, Ok.			10,087		
Olympia, Wash.			4,099		
Omaha, Neb.			102,635		
Pasadena, Cal.			9,117		
Paterson, N. J.			105,171		
Pensacola, Fla.			17,747		

STATISTICS

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	Population Census of 1900	Population Census of 1910	Population	
Peoria, Ill.	56,100	66,950	11. Moscow, Russia.....1909.....1,481,200	
Philadelphia, Pa.	1,298,697	1,549,008	12. Buenos Aires, Argentina.....1911.....1,326,994	
Phoenix, Ariz.	5,544	11,134	13. Calcutta, India.....1910.....1,216,514	
Pierre, S.D.	2,806	8,656	14. Constantinople, Turkey.....1910.....1,125,000	
Pittsburgh, Pa.	321,618	583,905	15. Osaka, Japan.....1908.....1,117,151	
Ponce, Porto Rico	27,952	85,027	16. Shanghai, China *	1,000,000
Portland, Me.	50,145	58,571	17. Tientsin, China *	1,000,000
Portland, Ore.	90,426	907,214	18. Rio de Janeiro, Brazil.....1909.....1,000,000	
Providence, R.I.	175,587	224,926	19. Bombay, India.....1910.....972,892	
Pueblo, Col.	28,157	44,395	20. Hamburg, Germany.....1910.....986,000	
Raleigh, N.C.	18,648	19,218	21. Budapest, Austria-Hungary.....1910.....880,371	
Reading, Pa.	78,961	96,071	22. Glasgow, Scotland.....1911.....784,455	
Richmond, Va.	55,050	127,623	23. Warsaw, Russia.....1909.....781,179	
Rochester, N.Y.	102,608	218,149	24. Liverpool, England.....1910.....761,606	
Rutland, Vt.	11,499	18,546	25. Barcelona, Spain.....1911.....700,000	
Sacramento, Cal.	29,282	44,696		
St. Ignatius, Mich.	42,845	50,510		
St. Augustine, Fla.	4,272	5,494		
St. Joseph, Mo.	102,979	77,408		
St. Louis, Mo.	515,288	681,029		
St. Paul, Minn.	168,065	214,744		
Salem, Mass.	85,956	48,697		
Salem, Ore.	4,258	14,094		
Salt Lake City, Utah	58,581	92,777		
San Antonio, Tex.	58,821	96,614		
San Diego, Cal.	17,700	89,578		
San Francisco, Cal.	342,782	416,912		
San José, Cal.	21,500	28,946		
San Juan, Porto Rico	32,048 (*99)	48,716		
Santa Fé, N. Mex.	5,608	5,072		
Savannah, Ga.	54,244	65,064		
Sorron, Pa.	102,026	129,561		
Seattle, Wash.	50,671	287,194		
Sitka, Alaska	1,396	1,036		
Somerville, Mass.	61,643	77,286		
Spokane, Wash.	36,848	104,402		
Springfield, Ill.	84,159	51,678		
Springfield, Mass.	62,059	88,926		
Stockton, Cal.	17,506	28,238		
Superior, Wis.	81,091	40,884		
Syracuse, N.Y.	109,874	187,249		
Tacoma, Wash.	37,714	58,748		
Tallahassee, Fla.	2,981	5,018		
Tampa, Fla.	15,889	37,782		
Terre Haute, Ind.	36,673	58,157		
Toledo, O.	131,822	168,497		
Topeka, Kan.	38,603	48,684		
Trenton, N.J.	73,707	94,515		
Troy, N.Y.	15,057	76,513		
Vicksburg, Miss.	14,884	20,814		
Washington, D.C.	278,718	381,069		
Wheeling, W. Va.	98,878	41,641		
Wilkes-Barre, Pa.	51,721	67,105		
Wilmington, Del.	76,508	87,411		
Wilmington, N.C.	20,976	25,748		
Worcester, Mass.	118,421	145,986		
Youngstown, O.	44,886	79,066		
TWENTY-FIVE LARGEST CITIES IN THE WORLD				
1. London, England	1910.....	4,873,702	Population	
Greater London	1910.....	7,587,196		
2. New York, U.S.	1910.....	4,766,888		
3. Paris, France	1911.....	2,846,986		
4. Tokyo, Japan	1908.....	2,184,079		
5. Chicago, U.S.	1910.....	2,185,288		
6. Berlin, Germany	1910.....	2,070,695		
7. Vienna, Austria-Hungary	1911.....	2,004,291		
8. St. Petersburg, Russia	1910.....	1,907,708		
9. Canton, China *	1,600,000		
10. Philadelphia, U.S.	1910.....	1,549,008		
Bordeaux, France	1911.....	85,000		
Bremen, Germany	1910.....	40,000		
Brisbane, Australia	1909.....	38,246		
Brussels, Belgium	1910.....	38,246		
Bucharest, Roumania	1905.....	38,551		
Belfast, Ireland	1910.....	38,167		
Belgrade, Servia	1910.....	34,285		
Berlin, Germany	1910.....	2,070,695		
Berne, Switzerland	1910.....	85,264		
Birmingham, England	1910.....	570,118		
Bogota, Colombia	1909.....	150,800		
Bombay, India	1910.....	972,892		
Bordeaux, France	1911.....	261,678		
Bremen, Germany	1910.....	246,872		
Brisbane, Australia	1909.....	148,077		
Brussels, Belgium	1910.....	665,806		
Bucharest, Roumania	1905.....	900,000		
Budapest, Austria-Hungary	1910.....	880,871		
Buenos Aires, Argentina	1911.....	1,326,994		
Cairo, Egypt	1907.....	664,476		
Calcutta, India	1911.....	1,216,514		
Callao, Peru	1908.....	81,000		
Canton, China	1,800,000		
Cape Town, Cape Colony	1911.....	67,000		
Caracas, Venezuela	1911.....	12,429		
Cayenne, French Guiana	1910.....	12,426		
Cettigne, Montenegro	1906.....	4,500		
Christiansburg, Norway	1910.....	242,901		
Cologne, Germany	1910.....	516,167		
Constantinople, Turkey	1910.....	1,125,000		
Copenhagen, Denmark	1911.....	402,161		
Dresden, Germany	1910.....	546,882		
Dublin, Ireland	1910.....	402,928		
Edinburgh, Scotland	1911.....	380,815		
Fez, Morocco	1910.....	140,000		
Florence, Italy	1911.....	282,560		
Frankfort, Germany	1910.....	414,598		
Georgetown, British Guiana	1911.....	58,000		
Geneva, Switzerland	1910.....	126,520		
Genoa, Italy	1911.....	272,077		
Glasgow, Scotland	1911.....	784,455		
Hague, The Netherlands	1910.....	280,515		
Halifax, Nova Scotia	1911.....	44,000		
Hamburg, Germany	1910.....	936,000		
Havana, Cuba	1910.....	802,526		
Havre, France	1911.....	186,159		
Hobart, Tasmania	1911.....	37,719		

* The populations of Chinese cities are very uncertain. The latest estimates give them a far smaller population than was formerly given.

APPENDIX

	Population		Population		
Hongkong, China.....	1911.....	866,145	Vera Cruz, Mexico.....	1910.....	29,164
Irkutsk, Siberia.....	1908.....	108,060	Victoria, Canada.....	1911.....	82,000
Jerusalem, Turkey in Asia.....	1910.....	70,000	Vienna, Austria-Hungary.....	1911.....	2,004,291
Johannesburg, Transvaal.....	1910.....	158,580	Warsaw, Russia.....	1909.....	751,179
Kabul, Afghanistan.....	1906.....	60,000	Wellington, New Zealand.....	1911.....	70,728
Kimberley, Cape Colony.....	1911.....	18,656	Winnipeg, Canada.....	1911.....	185,000
La Paz, Bolivia.....	1909.....	78,866	Yokohama, Japan.....	1908.....	394,308
Leipzig, Germany.....	1910.....	587,635	Zurich, Switzerland.....	1910.....	189,068
Lima, Peru.....	1908.....	140,884			
Lisbon, Portugal.....	1900.....	856,009			
Liverpool, England.....	1910.....	767,606			
London, England.....	1910.....	4,872,702			
London, Greater.....	1910.....	7,597,196			
Lyon, France.....	1911.....	528,796			
Madras, India.....	1910.....	518,660			
Madrid, Spain.....	1910.....	571,599			
Malaga, Spain.....	1910.....	189,045			
Manchester, England.....	1910.....	716,854			
Mandalay, Burma.....	1910.....	138,299			
Marseille, France.....	1911.....	550,619			
Mecca, Turkey in Asia.....		80,000			
Melbourne, Victoria.....	1910.....	591,830			
Mexico City, Mexico.....	1910.....	470,659			
Milan, Italy.....	1911.....	599,200			
Mocha, Turkey in Asia.....	1900.....	5,000			
Montevideo, Uruguay.....	1909.....	291,465			
Montreal, Canada.....	1910.....	466,000			
Moscow, Russia.....	1909.....	1,451,200			
Munich, Germany.....	1910.....	595,053			
Naples, Italy.....	1911.....	723,208			
Odessa, Russia.....	1909.....	478,900			
Ottawa, Canada.....	1911.....	86,000			
Para, Brazil.....		65,000			
Paramaribo, Dutch Guiana.....	1910.....	85,082			
Paris, France.....	1911.....	2,846,986			
Peking, China.....		1,600,000			
Pernambuco, Brazil.....	1906.....	150,000			
Perth, Western Australia.....	1908.....	54,854			
Prague, Austria-Hungary.....	1910.....	228,741			
Quebec, Canada.....	1910.....	78,000			
Quito, Ecuador.....	1909.....	70,000			
Riga, Russia.....	1908.....	818,400			
Rio de Janeiro, Brazil.....	1909.....	1,000,000			
Rome, Italy.....	1911.....	538,684			
Rotterdam, The Netherlands.....	1910.....	426,888			
St. John, Canada.....	1911.....	42,000			
St. John's, Newfoundland.....	1901.....	81,501			
St. Petersburg, Russia.....	1910.....	1,907,708			
Santiago, Chile.....	1907.....	382,724			
Sao Paulo, Brazil.....	1909.....	400,500			
Seoul, Korea.....	1911.....	278,958			
Shanghai, China.....		1,000,000			
Singapore, Straits Settlements.....	1911.....	311,985			
Smyrna, Turkey in Asia.....	1910.....	350,000			
Sofia, Bulgaria.....	1910.....	102,769			
Stockholm, Sweden.....	1910.....	841,986			
Sucre, Bolivia.....	1909.....	28,416			
Sydney, Australia.....	1910.....	621,100			
Teheran, Persia.....	1905.....	250,000			
Tientsin, China.....	1910.....	1,000,000			
Timbuktu, Sudan.....		20,000			
Tokyo, Japan.....	1908.....	2,156,079			
Toronto, Canada.....	1911.....	876,000			
Trieste, Austria-Hungary.....	1910.....	239,475			
Tripoli, Tripoli.....	1909.....	80,000			
Tunis, Tunis.....	1906.....	227,519			
Turin, Italy.....	1911.....	427,788			
Valparaiso, Chile.....	1907.....	162,447			
Vancouver, Canada.....	1911.....	100,000			
Venice, Italy.....	1911.....	160,737			

HEIGHT OF A FEW MOUNTAIN PEAKS			
		Feet	
Mount Everest, Himalaya Mountains, Asia.....		29,002	
Kanchanjangha.....		28,156	
Aconcagua, Andes Mountains.....		22,860	
Mt. McKinley, Alaskan Mountains, Alaska.....		20,464	
Mt. Logan, Coast Ranges, Canada.....		19,539	
Orizaba, Sierra Madre, Mexico.....		18,814	
Mt. Elbruz, Caucasus Mountains, Russia.....		18,200	
Mt. St. Elias, Coast Range, Alaska.....		18,026	
Mont Blanc, Alps Mountains, France.....		15,781	
Mt. Whitney, Sierra Nevada Mountains, California.....		14,502	
Mt. Rainier, Cascade Mountains, Washington.....		14,868	
Mt. Shasta, Cascade Mountains, California.....		14,880	
Pikes Peak, Rocky Mountains, Colorado.....		14,111	
Mauna Loa, Hawaiian Islands.....		13,675	
Fremont Peak, Rocky Mountains, Wyoming.....		13,790	
Fujiyama, Japan.....		12,865	
Mt. Mitchell, Appalachian Mountains, North Carolina.....		6,711	
Mt. Washington, White Mountains, New Hampshire.....		6,279	
Mt. Marcy, Adirondack Mountains, New York.....		5,844	

SOME OF THE LARGEST RIVERS OF THE WORLD			
Name	Country	Length in Miles	Basin Area Square Miles
Missouri-Mississippi	United States	4,300	1,257,000
Nile	Africa	3,400	1,273,000
Amazon	South America	3,800	2,500,000
Ob	Siberia	3,900	1,000,000
Yangtse-Kiang	China	3,200	548,000
Congo	Africa	2,900	1,200,000
Lena	Siberia	2,800	950,000
Hoang-Ho	China	2,700	570,000
Niger	Africa	2,600	568,300
Plata	South America	2,580	1,200,000
Mackenzie	Canada	2,000	590,000
Volga	Russia	2,400	568,300
St. Lawrence	North America	2,200	580,000
Yukon	Alaska	2,000	440,000
Indus	India	1,800	312,700
Danube	Europe	1,770	900,000

TEN OF THE GREAT LAKES OF THE WORLD			
Name	Length in Miles	Breadth in Miles	Area in Square Miles
Caspian	680	270	169,000
Superior	390	160	80,829
Victoria Nyanza	230	220	80,000
Aral	225	185	26,900
Huron	250	100	22,822
Michigan	335	85	21,729
Tanganjika	420	50	12,650
Baikal	397	45	12,000
Erie	250	58	9,990
Chad (a shallow lake which grows very large in the rainy season and shrinks in the dry season)			about 10,000
			Africa

APPROXIMATE AVERAGE HEIGHT OF SOME PLATEAUS			
		Feet	
Tibet		10-15,000	
Bolivia		10-18,000	
Spain		2-3,000	
Mexico		5-6,000	
Western United States Plateau		5-6,000	
Brazil		2-5,500	

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

(WEBSTER'S INTERNATIONAL DICTIONARY)

ä, as in ale; å, as in sen'åte; å, as in kåre; å, as in årm; ä, as in åsk; ø, as in fi'nal; ñ, as in all; è, as in ève; ê, as in è-vent'; ê, as in fern; e, as in re'cent; i, as in ice; î, as in i-de'a; î, as in ill; ô, as in ôld; ô, as in ô-bey'; ô, as in ôrb; ô, as in ôdd; û, as in use; ú, as in ô-nite'; y, as in ryde; u, as in full; ü, as in üp; û, as in ürn; ý, as in pit'ý; öö, as in food; öö, as in foot; ou, as in out; oi, as in oil; n, representing simply the nasal tone of the preceding vowel, as in ensemble (äñ'sän'b'l), ' (for voice glide) as in pardon (pär'd'n); g (hard), as in go; s (sharp), as in so; z (like s sonant), as in zone; ch (=tsh) as in chair; sh, for ch, as in machine; zh (=sh made sonant), for z, as in azure; j (=dzh), for g, as in gem; k, for ch, as in chorus; kw, for qu, as in queen; ks (surd), for x, as in vex; gz (sonant), for x, as in exist; f, for ph, as in philosophy; hw, for wh, as in what; t, for ed, as in baked; ng, as in long; ñ (like ng) for n before the sound of k or hard g, as in bank; n (ordinary sound), as in no; th (sonant), for th, as in then; th (surd), as in thin.

The primary accent is indicated by a short, heavy mark ('), the secondary by a lighter mark (').

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Book I is designed for the fourth to sixth years, and Book II for the seventh and eighth years of the Elementary course.

In the *first* book emphasis is placed on matters of human interest,—the family, the school, social relations, and nature. The aim has been to produce subject-matter of genuine interest to children, and yet of intrinsic value. The fact is recognized that a knowledge of technical grammar without abundant exercises, both oral and written, exerts very little influence either on the daily speech or on the written composition of children. Constant effort is made to increase their vocabulary, to teach them variety of expression, and to make expression easy and natural. To bring about these results, there is a rational use of imitation to give mastery of proper forms. The exercises are adapted to the age of the pupil, and the forming of habits of correct oral speech is given the same attention as written composition. The explanations are lucid and clear; the exercises, copious and suggestive.

In the *second* book the illustrative sentences have been specially prepared by the authors. The sentences that make up the exercises are especially apt as illustrations of the principles in hand ; they have literary merit, being drawn largely from standard literature. In deference to a growing conviction that composition should be a subject of study distinct from grammar, a separate part of the book is devoted to this feature of language study. All exercises are "workable"; every sentence in every exercise illustrates the principle under discussion. Review questions are grouped at convenient intervals throughout the book.

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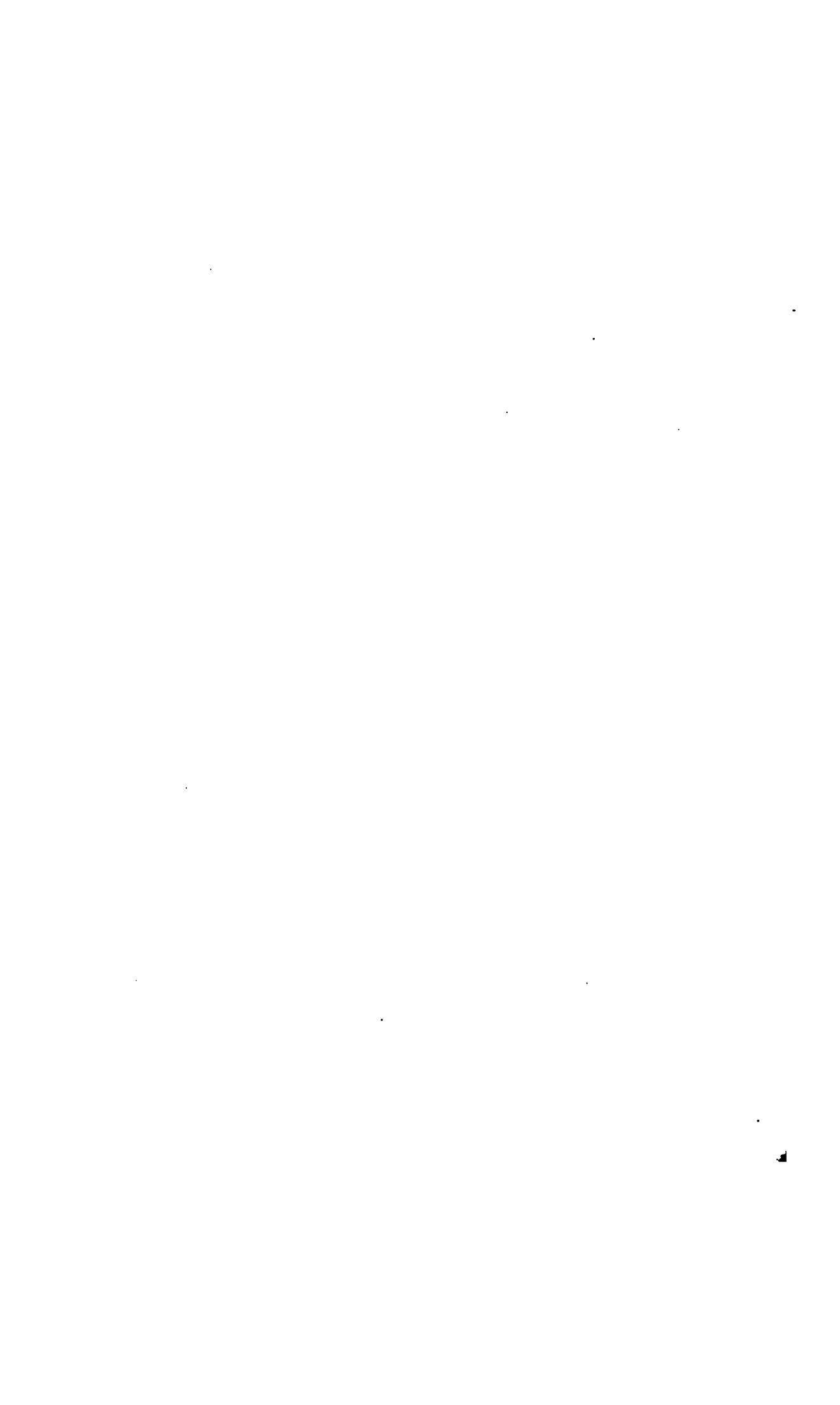
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